THE UNIVERSITY OF ALBERTA

STUDENT PERCEPTIONS OF OCCUPATIONAL CHARACTERISTICS:
A MULTIDIMENSIONAL APPROACH

by

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A THESIS
SUBMITTED TO THE FACULTY OF GRADUATE STUDIES AND RESEARCH
IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE
OF DOCTOR OF PHILOSOPHY

DEPARTMENT OF EDUCATIONAL PSYCHOLOGY

EDMONTON, ALBERTA

SPRING, 1977

THE UNIVERSITY OF ALBERTA

FACULTY OF GRADUATE STUDIES AND RESEARCH

The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research, for acceptance, a thesis entitled "Student Perceptions of Occupational Characteristics: A Multidimensional Approach" submitted by Wanlop Kansup in partial fulfilment of the requirements for the degree of Doctor of Philosophy.

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To My Father And My Mother
Whom Now I Can Meet,
As I Always Do,
Only In My Dreams.

ABSTRACT

The purpose of this study was to explore the nature of occupational characteristics as perceived by individuals and to demonstrate that the identified characteristic factors could be used to group occupations. The study followed the multidimensional approach.

There were two phases in the study. In the first phase, occupational characteristic factors were identified. Two groups of male and female grade nine students were used as subjects. The instrument was a set of 41 Semantic Differential (SD) scales. The SD scales were used with two lists, each consisting of 21 different occupational titles. A principal-axes factor analysis was used with the data and six characteristic factors found. The factors were: Personal Satisfaction, Values to Society, Life Security, Prestige or General Impression, Physical Security, and Power.

Eighteen SD scales were selected from the first phase as a measure of the six characteristic factors and used with a new list of 30 occupational titles in the second phase. The purpose was to group occupations according to their characteristic patterns. Ninety-three grade nine students, both male and female, were used. A principal components analysis was carried out on the data. Because there were indications of sex differences, the analysis was based on sex groups. Four occupational groups were found in both sex groups. Since the occupational groups corresponded to each other, they were labelled together. The four occupational groups were: Skilled and Semiskilled, Professional and Trained, Outdoor-Physical, and Creative-Artistic.

A profile of the occupational characteristics representing each group of occupations was constructed separately for males and for females and a profile analysis carried out. Results showed that, in general, boys and girls perceived an occupation in the same way. However, they tended to view an occupation differently if the occupation was traditionally regarded as being for male or for female only, or if the occupation was not familiar to them.

Implications of the study suggest that the characteristic factors found in the present study should be used in a study of vocational differences and vocational behaviors, and that a replication of the study with subjects at other levels would help find the stability or trend of occupational perceptions.

ACKNOWLEDGMENTS

The writer wishes to express his thanks to members of the thesis committee: Drs. E. W. Romaniuk, S. M. Hunka, T. O. Maguire, D. D. Sawatzky and M. W. Petruk, and Dr. R. Hambleton who served as the external examiner, for their contribution to the completion of this project. Special thanks are expressed to Dr. E. W. Romaniuk, the thesis supervisor, for his very generous and friendly supervision; to Dr. S. M. Hunka, for his advice and suggestions in data analysis; and to Dr. T. O. Maguire, for his guidance, encouragement and many suggestions from the beginning of the project until its end.

Mr. Craig Montgomerie of the Division of Educational Research Services deserves thanks for his help in computer programs. Other members of the Division who also helped him in one way or another during the various stages of the project also deserve thanks.

Grateful acknowledgment is given to Dr. T. Blowers, Director of Educational Research, Mr. F. Nichols, Director of Counselling, both of the Edmonton Public School Board, and to the School Board itself for their cooperation in data collection. Acknowledgment is also extended to Mr. V. Nakonechny, Principal of Hardisty Junior High School, Mr. F. Loewen, Principal of Balwin Junior High School, and all teachers and grade nine students who took part in the data collection.

Finally, the writer wishes to express his hearty appreciation to his wife and his children. Their love and encouragement always played a mojor role in making the goal of his study career come true.

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CHAPTER 1

INTRODUCTION

> Perception, functionally speaking, is the process by which we obtain firsthand information about the world around us. It has a phenomenal aspect, the awareness of events presently occuring in the organism's immediate surrounding. It has also a responsive aspect; it entails discriminative, selective response to the stimuli in the immediate environment. .... Perception is selective by nature. .... In man a rather gross selectivity at birth becomes refined with development and experience. (Gibson, 1969, p. 3)

The Problem

General agreement can probably be obtained on the existence of both individual and group differences between people who have selected various occupational fields. Knowledge about such differences can be especially helpful to vocational counsellors, to student advisors, and to selection and placement officers in industrial personnel work. However, it has been regarded by most vocational theorists that the process of vocational choice is the transaction between the individual and his environment in which job perceptions are obviously involved (Gonyea, 1963, p. 20). Knowledge about an individual's perception of occupations is thus essentially a part of vocational differences. Accordingly, an individual's perception of occupations would be a subject of interest among people involved in helping individuals making vocational choices. To the extent that an individual makes an occupational choice based on the information about oneself in relation to the information about occupations, whether this information is obtained from counselling or elsewhere, it is obvious that such information is helpful only when that person has correspondingly clear information about that occupation. Thus, occupational information plays a significant role in the process of occupational choice. One critical requirement for an intelligent choice is that the individual has an objective and an accurate perception of the relevant job.

There is an assortment of occupational attributes which may be objects of subjective perception (Crites, 1969, p. 46; Zytowski, 1968, p. 85). One which has been of continuing interest to sociology and also to education is prestige. Attributes in a category similar to prestige might include power or influence, independence, security, and might range through the entire category of reasons people find for preferring one kind of work over another.

Another perspective is represented by the perception that occupations demand certain requirements or attributes -- great sacrifice, devotion, or altruism, or that they require risk to life or limb.

Occupations may also be subjectively appraised in terms of the qualities of people in them -- their images, as some prefer. This has been one popular topic of interest among educators for quite a long time.

In this study, the attributes related to an occupation have been collectively called occupational characteristics.

Accordingly, the individual's perception of occupations may be viewed as the collective strength of positive or negative affective responses he attaches to them (Tseng & Rhodes, 1973). It has been suggested (Garbin, 1967; Irvine, 1969; Rossi & Inkeles, 1957; Terwilliger, 1963) that an individual's perception of an occupation is, in fact, a complex multidimensional combination of several occupational attributes or characteristics, and that every occupation carries with it several factors, e.g., income, prestige, autonomy, power, and numerous other factors. Each occupation is perceived by groups of individuals to have certain societal rank with respect to these characteristics. Though these characteristics are not distributed at random, occupations do vary in the profiles of characteristics which they display. In the evaluations of occupations,each occupation is judged on several factors. The standings of the occupation in specific factors then enter systematically into its general evaluation. Hence, studies on evaluation of occupation should simultaneously explore several factors of the occupation, and then make appropriate use of these findings collectively in other related studies.

For most people, especially students who first face the task of selecting a subject in school, vocational behavior is structured and actualized partly on the basis of perception. Therefore, considerably more studies on the perception of occupations seem justified. This means that the factors which account for the perception of occupations must be woven into our conceptualization of the activity of pursuing careers. To this goal, knowledge of the multidimensional characteristics of occupations will undoubtedly have considerable implication for more effective vocational guidance and enhancement of occupational adjustment. An individual who understands the attributes or characteristics which typify various occupations will be in an advantageous position to make vocational decisions in which a congruent relationship exists between personal attributes and relevant occupational characteristics. Comprehensive and accurate knowledge of the characteristics of occupations seems to be a vital part in promoting successful vocational adjustment.

A number of studies have been made on the perceptions of occupational characteristics. Most of the studies (Brown, 1969; Clack, 1968; Clark & Seals, 1975; Hicks, 1967, 1969; Hodge, Siegel & Rossi, 1964; Medvene & Collins, 1974; Tiryakian, 1957; Tseng & Rhodes, 1973), however, have proceeded according to a typical design in which subjects have been asked to rate or rank occupations according to a single criterion which is of a general or summary nature. Examples of the criteria are general status, general reputation, or social status. Consequently, it is not possible to state how these occupations would be rated on more specific factors, nor is it at all clear why the particular occupations have been assigned the general status accorded them. There have been some studies using the multidimensional concept of occupational characteristics (Beardslee & O'Dowd, 1961; Dickinson, 1954; Dipboye & Anderson, 1959; Garbin, 1967; Hicks, 1966; Osgood & Stagner, 1941; Osipow, 1962; Rossi & Inkeles, 1957; Thompson, 1966; Triandis, 1959). However, these studies have been concerned with a set of predetermined factors, usually generalized by the investigator's own subjectivity, and have been directed toward finding relationships with other traits or variables. Few studies (Gonyea, 1961; Irvine, 1969; Terwilliger, 1963) have been concerned with the more fundamental problem of trying to define the underlying characteristics of occupations. Moreover, a review of this latter group of studies revealed that the occupational characteristic factors found were not the same. This may have resulted from differences of both the approach and the scope of these studies. It indicates that further study of this problem is needed.

The aim of the present study is to examine the individual's perceptions of occupations as they relate to vocational behaviors. However, there is a wide range of ages at which an individual makes decisions about vocational choice. This study was concerned with individuals at a specific level. Under the present Alberta educational system, an individual first meets the task of vocational choice just prior to entering senior high school. At that time he must choose subject areas that reflect his ability and/or his interest. Therefore, it was decided to concentrate the study on individuals at the grade nine level.

At present, the concept of human development has been accepted and integrated as a part of most, if not all, areas of study about human life. Vocational psychology is no exception. Today no one would argue with a concept of vocational behavior as having important developmental qualities (Zytowski, 1968, p. 119). Thus, this study took into account the developmental aspect of an individual's vocational behavior.

Purpose of the Study

The main concern of the present study is to examine the individual's perception of occupational characteristics. The individuals of interest are grade nine students. According to the proposition that the perceptions of occupations are multidimensional, the purpose of this study is to identify the factors of occupational characteristics as perceived by grade nine students.

Since this study is exploratory in nature, the focus is on both structuring and measuring the domain of interest. In this regard, Osgood's Semantic Differential Technique (SD), which was initially designed for this type of study, was chosen as the method of collecting data. The rationale behind this selection, including the related literature of the SD, is presented in chapter 3. The use of the SD along with the design of the study, as presented in chapter 3, lead to a sound conclusion to the problem of structuring the domain of occupational perceptions.

The specific purposes of the study are as follows:

1. To suggest a set of verbal labels which can be used to describe occupational characteristics as perceived by the subjects, and to group these labels into parsimonious clusters or characteristic factors.

2. To group a sample of occupations based on similar characteristic profiles, and to set up a representative profile for each occupational group, and

3. To obtain a set of bipolar-adjective scales for use in measuring the perception of occupational characteristics.

CHAPTER 2

REVIEW OF RELATED LITERATURE

There are two parts in this chapter. The first part is a review of some theories of vocational development. The developmental stages of an individual in relation to vocational choice is the main concern of this review. The second part is centered around the empirical aspect of the problem and consists of a review of previous studies on the perception of occupational characteristics.

A Developmental Concept of Vocational Behavior

The developmental concept of vocational behavior proposes that the process of vocational choice -- the decision involved in the selection of an occupation -- is made at a number of different points in an individual's life and that it constitutes a continuous process which starts in childhood and ends in early adulthood (Crites, 1969, p. 100).

This concept of vocational choice as a developmental process had its origin in the early work of Carter (1940). He examined the formation of interest patterns in adolescence, and concluded that they develop as the individual matures. According to Carter, interest patterns are formed to assist the individual to fit himself, with his biological attributes, into the somewhat rigid social structure of institutions. He acquires interest patterns through his identification with some respected persons or group. Often the individual makes a good adjustment, but sometimes the adjustment is inappropriate. If the adjustment is inappropriate, the individual must discard or modify his interest pattern in order to solve the practical problems of every day living. Carter feels that the trial-and-error process of developing an interest pattern is one which progresses from the less mature fantasy solutions of later childhood to the more mature realistic solutions of youth and adulthood.

Current theories of vocational development, similar to Carter's, propose that choice behaviors mature as the individual grows older (Beilin, 1955; Dysinger, 1950). Leading among these theories, at present, are those developed by Ginzberg (Ginzberg, 1952; Ginzberg et al., 1951), and by Super (Super, 1953, 1957; Super & Overstreet, 1960; Super et al., 1957, 1963). Since these two theories are well known and are relevant to the present study, they will be reviewed here. Some other propositions will also be discussed in connection with these two theories. The emphasis of this review is on the developmental stages of vocational behaviors.

Ginzberg's Developmental Concept of Vocational Chioce. Ginzberg (Ginzberg, 1952; Ginzberg et al., 1951) proposes three basic elements about the developmental nature of vocational choice. First, occupational choice is a process which spans the entire period of adolescence from approximately age 10 to 21. Second, the process is largely irreversible -- once launched upon a particular course of action, an individual finds it increasingly difficult to change his goals as time passes. And third, compromise is an essential aspect of every choice -- the process ends with a compromise between an individual's needs and the realities which impinge upon him. Ginzberg maintains that vocational choice involves some element of compromise and some concession to the limitation of environmental conditions.

According to Ginzberg, the process of occupational decision-making could be analyzed in terms of three periods -- fantasy choices (before age 11); tentative choices (between ages 11 and 17); and realistic choices (between age 17 and young adulthood when a person finally determines his choices). The child in the fantasy period believes that he can become whatever he wants to become. He makes an arbitrary translation of his impulses and needs into occupational choice. During the tentative period, his translation is almost exclusively in terms of such subjective factors as his interests, capacities, and values. Adolescents consider their choices tentative because they sense that they have not effectively incorporated the reality factor into choice considerations. They are able to do this during the realistic period when/they seek to work out a compromise between their interests, capacities, and values, and the opportunities and limitations of the environment (Ginzberg, 1952).

Ginzberg subdivided the two later periods into stages. He subdivided the tentative period into four stages and the realistic period into three stages. The tentative period includes the interest stage (ages 10-12), capacity stage (ages 12-14), value stage (ages 15-16), and the transition stage (age 17 or 18). In the interest stage, a tentative choice is based almost exclusively on interest. Later on, in the following two stages, the capacity and then the value are taken into consideration respectively. The transition stage is the stage in which the individual is looking forward to college or a job.

The realistic period begins with the exploration stage, during which the individual seeks for the last time to acquaint himself with his alternatives. This is followed by the crystallization stage in which he determines the choice, and finally by the specification stage, during which he delimits his choices (Ginzberg, 1952).

Later on in his theoretical development, Ginzberg (1972) suggests three conceptual changes. First, he modifies his assertion that the occupational decisions are life-span phenomenon, not just a short-term event between late adolescence and early adulthood. Second, the emphasis on the irreversibility of the process is shifted to viewing it in terms of the expenditure of time and resources. That is, careers may be directed in major ways, though there are costs involved, and these costs operate in some ways to make the process irreversible for some people at some times. Finally, the concept of optimization replaces that concept of compromise. That is, Ginzberg proposes, there is a continuing search on the part of individual for the best fit between the career avenue he prefers and the opportunities open to him. These three changes are considered as an improvement of Ginzberg's theory, though the basic style of the concept remains unchanged (Osipow, 1973, p. 92).

In this study, the subjects fell into the last two stages of the tentative period.

Super's Developmental Self-Concept Theory of Vocational Behavior. Whereas Ginzberg bases his developmental theory of vocational choice upon the concept of psychoanalytic ego psychology, Super's theoretical framework is based on three psychological areas: the field of differential psychology, the self-concept theory, and the developmental psychology (Osipow, 1973, pp. 131-132). On the basis of differential psychology, Super proposes that an individual possesses a potential for success and satisfaction in a variety of occupational settings. Interests and abilities are likely to fall into patterns more consistent with some occupations than others. People are likely to be more satisfied if they are in an occupation that requires a pattern of interests and abilities clearly corresponding to their own characteristics.

The self-concept theory led Super to propose that self concepts develop on the basis of children's observation of and identifications with adults involved in work. Finally, the principles of developmental psychology led him to the concept of life stages. He proposes that a person's mode of adjustment at one period of his life is likely to be predictive of his technique of adjustment at later period (Osipow, 1973, p. 133).

On the basis of these principles, Super bases the formulation of his theory upon 10 propositions (Super, 1953, pp. 189-190). He views and emphasizes vocational choice as a process and suggests using the term "development" instead of the term "choice" (Super, 1953, p. 187). He also introduces the concept of vocational maturity to denote the degree of development from the time of the early fantasy in childhood to the decision about retirement in the old age (Super, 1955, p. 187).

Super proposes five distinct life stages covering the entire vocational life of an individual. They are: growth stage (birth-age 15), exploration stage (ages 15-24), establishment stage (ages 25-44), maintenance stage (ages 45-64), and decline stage (ages 65 and over). These stages, except the maintenance stage, are also divided into several substages (Super et al., 1957, pp. 40-41).

According to Super's scheme, the subjects in this study fell into the tentative substage of the exploration stage. Vocational behavior of an individual in this substage is described as follows:

> Tentative (15-17). Needs, interests, capacities, values, and opportunities are all considered. Tentative choices are made and tried out in fantasy, discussion, course, work, etc. (Super et al., 1957, p. 40)

In addition to the propositions about life stages, Super also proposes that the process of vocational development occurs by means of five activities which he calls vocational development tasks (Super et al., 1963). These five tasks are: crystallization, specification, implementation, stabilization, and consolidation. While these tasks can occur within any age range, Super suggests that they are likely to occur during a specific time, for example, the crystallization task occurs during the age range of 14-to-18 years. The subjects used in this study all fell into the crystallization-task category. The activities and behaviors relevant to this task, as conceptualized by Super, are as follows:

Crystallization (14-18)
1. Awareness of the need to crystallize
2. Use of resources
3. Awareness of factors to consider
4. Awareness of contingencies which may affect goals
5. Differentiation of interests and values
6. Awareness of present-future relationships
7. Formulation of generalized preference
8. Consistency of preference
9. Possession of information concerning the preferred occupation
10. Planning for the preferred occupation

11. Wisdom of the vocational preference.
(Super et al., 1963, p. 84)

Some Other Propositions of Developmental Life Stages. In addition to the developmental theories of Ginzberg and Super, there have been other formulations and speculation about how vocational choices are made over a period of time (Crites, 1969, p. 104). Propositions about life stages are also suggested which, in general, differ only in terminology from those suggested by Ginzberg and by Super. Tiedeman (Tiedeman,1961; Tiedeman & O'Hara,1963), for example, proposes the following two periods of vocational decision-making process: a period of anticipation or preoccupation, and a period of implementation and adjustment. Subdivision of these two periods into stages is also given. The stages in the anticipation period are: exploration, crystallization, choice, and classification. The stages in the implementation period are: induction, reformation, and integration. However, unlike the foregoing schemes, Tiedeman does not tie his life-stage scheme with chronological age. This implies that he views it as a matter of individual difference.

Other similar life-stage schemes proposed in vocational psychology are those from Miller and Form (1951) and Havighurst (1964). Miller and Form propose five stages, with no further subdivision, ranging from the temporary stage to the retired stage. Havighurst proposes six stages, also with no subdivision, ranging from the identification with worker to contemplating a productive and responsible life.

Regarding the adolescent ages, the two propositions state:

II Initial (14-end of formal or full time education)
Dependence upon home is weakened. Indoctrination of work values of responsibility, willingness to work hard, get along with people, handle money, etc.
Adjust aspiration to realistic level. Acquire technical and social skills relevant to job performance. Adjust to a worker culture. (Miller & Form in Zytowski, 1973, p. 148)

II Acquiring the Basic Habits of Industry (ages 10-15)
Learning to organize one's time and energy to get a piece of work done. School work, chores.
Learning to put work ahead of play in appropriate situations.
III Acquiring Identity as a Worker in the Occupational Structure (ages 15-25)
Choosing and preparing for an occupation.
Getting work experience as a basis for occupational choice and for assurance of economic independence. (Havighurst in Borow, 1964, p. 216)

Conclusion from Vocational Development Theory. The purpose of this review is to obtain a perspective of the developmental stages of an individual's vocational behavior at the grade nine level. Using Ginzberg's scheme, individuals in grade nine fall into the capacity (ages 12-14) and value (ages 15-16) stages of the tentative period. An individual in this period, as perceived by Ginzberg, tries to make a tentative vocational choice. He takes into account his interests, capacities, and then values. In addition, the individual at this life stage is alert to the occupational world surrounding him and pays more attention to their characteristics than at previous ages. It can be assumed, through this conceptualization, that he is in the stage of acquiring more and more information about the occupation at large. In view of the purpose of this study, it can be concluded from Ginzberg's proposition that the individual's occupational perception at this stage has already formed and is well organized.

Considering Super's scheme, the tentative substage (ages 15-17) of the exploration stage covers the age range of the grade nine students in this study. Super proposes that, for an individual at this substage, needs, interests, capacities, values, and opportunities all take part in the choice process, and then a tentative choice is made. Regarding the proposed life stages and vocational development tasks, Super's view is not much different from that of Ginzberg's. Hence, the same conclusion about the awareness of the individual regarding the world of work around him and his well-formed occupational perception can also be drawn from Super's propositions. The individual at this age seems to be able to use many of his own attributes for vocational decision-making. Two major disadvantages he still has at this time are the lack of experience and the lack of information about the occupational world. The former will be answered in time while the latter can be supplied by counsellors.

Regarding the main interest of the present study on occupational perceptions, it is evident from these theoretical propositions that the individual's occupational perception at grade nine are already formed and consistent. Since many of his personal attributes take part in forming this perception, the process of his occupational assessment should be well organized and, to a large degree, reliable.

Studies of the Perceptions of Occupational Characteristics

Having discussed some theoretical aspects of the problem, this part will center around the empirical aspect of studies on perceptions of occupational characteristics. As stated in previous chapter, there have been a large number of studies on the perceptions of occupational characteristics. However, most of these studies assumed a unidimensional concept and then related it with other traits or variables. Since this study maintains the assumption of multidimensionality, results of such studies seem not relevant for review here.

There have been two types of studies which have used the multidimensional assumption; those studies which dealt with a predetermined set of factors and their relationships with other external variables, and those studies which dealt directly with the fundamental problem of identifying the perceptual factors of occupational characteristics. The former is relatively larger in number than the latter. Since these two types are relevant to the present study, they will be reviewed and discussed next.

A Collective Term for Attributes Related to the Occupation. In this study, the attributes related to occupations, as perceived by individuals, are collectively termed occupational characteristics. The selection of this term has been difficult since the attributes related to an occupation are quite numerous. There has never been a conclusive agreement among vocational psychologists on the accountability of these attributes. Thus, investigators tend to conceptualize them collectively different from one another. Hence, the terms used to name these attributes were also different.

The favorite term is occupational "prestige". It has been used extensively, but not with the same definition. Other terms which have been used less frequently are: occupational rankings or ratings, perceptions, values, job characteristics, factors or factor ratings, and vocational or occupational preference. At present, there seems to be no single term that is widely accepted among investigators. This variation has arisen partly from the unidimensional vs. multidimensional approaches to the problem.

By inspecting the meaning assigned to these terms, it is conceived that, implicitly or explicitly, they all refer to the same concept -- the overall evaluation of occupations by individuals who perceive them. This conclusion seems true for both the unidimensional and multidimensional studies. There are two criteria used for the selection of a term in the present study. First, the term must best describe the attributes of interest, and second, the term must be easily understood by the people at large. Thus, it was decided to use the term "characteristics" in this study rather than using more technical terms (e.g., perceptions or values) or those which were less descriptive (e.g., prestige or preference). However, for the purpose of the literature review, studies using other terms will be presented, where appropriate.

The main focus of the following literature review is on the set of factors used or identified, not on the relations of these factors to other variables. This is because a study of the relationships seems to be the next step beyond the scope of this study.

Studies with Predetermined Set of Characteristic Factors. The idea of a multidimensional approach to occupational perceptions has been with us for some time. For example, Osgood and Stagner (1941) studied what they called occupational "prestige frame of reference". In the study, they used a gradient technique, which was a very early version of the well known Semantic Differential technique, as a method of data collection. Ten bipolar scales were used. The paired words were: hopeful, noticed, brains, dollar, exciting, pleasant, free, sociable, secure, and short hours. They also used a "general prestige" ranking of occupations as a criterion. Two purposes of this study were: to demonstrate the utilization of this new technique, and to "demonstrate the particular determinants of the frame of reference known as occupational prestige" (p. 276) under the assumption that "decisions are commonly based upon standards which may be unverbalized and perhaps unconscious" (p. 275). Fifteen occupational titles were used and the subjects were 100 college males in psychology. Osgood and Stagner found that the correlations between each scale and general prestige were amazingly high. All values except one were in the range from .79 to .99. They noted that students reacted to the occupational characteristics, as measured by these scales, in "a fashion almost identical with their judgments of its general prestige" (p. 283). One of their conclusions, regarding the occupational characteristics, was that "prestige is imputed to perceptions *per se* on the basis of such characteristics as hopefulness, being noticed, financial return, brains, excitingness, and pleasantness" (p. 289).

Dickinson (1954) used seven predetermined factors with groups of about 1200 male college students who had expressed preference for careers in Accounting, Teaching, Engineering, Administrative or Sales work. His concern was on the differences in relative importance of certain "job factors" among groups of students who expressed preference for different careers. He found that different patterns of interest, as indicated by the ranks of these seven factors, were apparent among the five fields in his study. The seven job factors he used were: Advancement, Benefits, Human Relations, Job Security, Type of Work, Salary, and Working Conditions.

Rossi and Inkeles (1957) conducted a study on "multidimensional ratings" of occupations with a large heterogeneous group of Russian refugees in Germany and the United States. The subjects, 2146 in all, were asked to use a five-point scale to rate 13 occupations available in the Soviet Union at that time, ranging from Doctor to Rank and File Collective Farmer. These scales were presented in the form of five questions, each of which was designed to measure one of the following occupational factors: General Desirability, Material Position, Personal Satisfaction, Safety, and Popular Regard. They found that the relative standings of occupations were different among the five factors, suggesting that the individual factors were sufficiently independent measures of occupations. Furthermore, there was some evidence that certain types of occupations shared a common or a very similar profile. These findings led Rossi and Inkeles to the summary and conclusion that:

> The conceptions were not rated consistently high or low on all dimensions but rather showed relatively diversified rating profiles. This strongly suggests that occupations are realistically perceived in accordance with the objective differentiation in their "life chance" rather than in accordance with some underlying standard which is then projected onto the other dimensions. .... In general, however, this study suggests that a precisely differentiated image of various occupations is widely diffused throughout modern industrial population, and this must be recognized as important in understanding the integration of the larger social structure of such society." (pp. 250-251)

Dipboye and Anderson (1959) studied the ordering of "occupational values" by high school students. They viewed occupational values as being composed of nine elements: Security, Prestige, Salary, Interesting Work, Advancement, Working Conditions, Relations with Others, Independence, and Benefits. Dipboye and Anderson asked 823 ninth and 358 tenth graders (600 boys and 581 girls) to rank these nine attributes according to their importance for choosing a job. The researchers' main concerns were about sex and grade differences. They found significant sex differences but small grade differences. They reasoned that because of the similarity between grades, "occupational values are generally well formed by the time the pupil completes the 9th grade and that little change takes place during his high school career" (p. 124).

At least three studies have used Osgood's Semantic Differential technique (SD), with its three factors (i.e., Evaluation, Potency, and Activity), in measuring the perceptions of occupational characteristics. Triandis (1959) used 38 scales for rating 5 jobs (e.g., welder, teacher) and 6 people (e.g., their supervisors, fellow workers) by 156 subjects representing various groups in industry. He compared the ratings of the same job by different status groups and found that differences existed. Beardslee and O'Dowd (1961) used 48 scales to measure the "image" of scientist, as perceived by some 1200 college students, in comparison with their images of other 14 occupations. They found that the image of a scientist was similar to those with intellectual roles, e.g., college professor, engineer, etc., but different from those of the business and industrial occupations.

Finally, Osipow (1962) investigated the perception of occupations as a function of titles and descriptions. He used 15 SD scales, five scales on each of the three factors. The scales were rated by 96 university students on two job titles: building superintendent and janitor. Subjects were divided into four equal-size groups. Two groups rated one of the two job titles "with a description", and the other two groups rated a job title "without a description". Osipow found that "differences in attitude toward the job titles were found on the evaluative and potency dimensions of meaning under 'no description' condition. Neither of these differences appeared under 'description' condition" (p. 108). He concluded that the differences in perceptions of careers along various factors, when the stimuli were presented in the form of specific job titles, did exist, and that these differences would be reduced if minimal occupational descriptions had been also presented. He also noted that "these results suggest that the semantic differential method may be useful in the study of occupations" (p. 108).

Thompson (1966) designed his study to explore "Super's belief that the ninth-grader is in the vocational exploration stage" (p. 850). He used what he called an occupational value scale which included 10 "job characteristics" with 2287 grade nine students in 1962 and then in the next year with 1788 of the original sample in tenth grade (895 boys and 893 girls). Ten job characteristics included in the occupational value category were as follows:

1. Having an interesting job,
2. Opportunity to express own idea,
3. Having security,

4. Helping other people,
5. Being recognized,
6. Gaining esteem,
7. Obtaining a high salary,
8. Having independence,
9. Being a leader, and
10. Being a boss.

Subjects were asked to check each of these 10 occupational values as being either "important" or "not important". The two main comparisons made in this study were: the differences between ninth and tenth graders, and the differences between sexes. Results of these comparisons led Thompson to the conclusion that:

> Super's (1960) hypothesis that the ninth-graders are ready to consider problems of pre-vocational and vocational choice is borne out in this study. Freshman students were very definite in what was important to them in a vocation, and in their sophomore year over three-fourth still rated the importance of these occupational values just as they had a year previously. .... While there are some significant differences between boys and girls when considered as groups in the importance placed upon certain values, there was no significant difference between how the boys, as a group, responded as freshmen and as sophomores. The same was true for girls. Thus, how ninth- and tenth-graders view their vocational choice may be well established upon entering high school and may not change readily (p. 853).

By hypothesizing that "the prestige value of occupations is determined by a kind of synthesis or accumulation of various factors or dimensions of relevance to occupation" (Hicks, 1966, p. 56), Hicks proposed and used six factors, along with the general "prestige rating", with 85 railway workers in Zambia. These workers were composed of firemen, shunters, guards, and clerks. The six factors were:

1. Responsibility with the job,
2. Service value of the job,
3. Money offered in the job,
4. Working conditions,
5. Education and intelligence needed in the job, and
6. Working relationships which develop in the job.

Twelve occupations, chosen to give a coverage of those normally rated from high to low in prestige, were used. Subjects were asked to rate each occupation, on a five-point scale, regarding its importance on each factor, and the general prestige. Correlations between prestige and each factor, and the sum of all six factors were computed. It appeared that the correlation of .944 between prestige and the sum was higher than any value between prestige and a single factor. Recognizing that the scope of his study was not sufficient to confirm the stated hypothesis, Hicks took caution to conclude that "the prestige ratings of occupations, considered generally, are influenced by a variety of factors, the cumulation of which results in the prestige score obtained" (p. 57).

Garbin (1967) used 30 occupations to be rated by subjects on "occupational prestige" and 20 other factors. The occupations were selected to represent a cross-section of the American occupational status and were familiar to most people. The twenty factors were collected from the literature and later in the study, were categorized into six groups of related traits. The groups were: Rewards, Intrinsic Nature, Intellectual and Training Requirements, Individual Independence, Working Conditions, and Interpersonal Relations. A total of 490 individuals from six subject groups were used. These groups were: students, bankers, secretaries, professors, morticians, and manual workers. Approximately three fourth of subjects were males. They were asked to use a five-point scale to rate 30 occupations on 21 factors. Mean scores on these factors were computed for each occupation and then converted into rank order hierachies. The analysis was carried out using prestige as the dependent variable. Garbin found that "perceptions of work dimensions are relatively uniform despite the diversity of respondents", and that "the multidimensional rankings of occupational positions constitute relatively precise and definite system of differentiation" (p. 24).

Studies reviewed up to this point used predetermined characteristic factors of occupations. It is evident that several factors are common among these studies. Some other factors, which seem different at the first glance, turn out to be quite similar when the underlying meanings are examined. Thus, it is apparent that there has been, to a large degree, a consensus among investigators about what accounts for the occupational characteristics. However, there are still several factors unique to specific studies. To gain a better view of the similarities and differences between these factors, Table 1 contains those factors considered to be the same or similar in nature. The matching of these factors is subjective. Three studies by Triandis (1959), Beardslee and O'Dowd (1961), and Osipow (1962) are not included since they made use of the SD factors considered too general for the nature of the present problem. Thus, seven studies are included in Table 1. It should be noted that Garbin's six factor categories are used instead of his 20 factors. In order to start the matching procedure, Dickinson's

Table 1

Matching Factors of Occupational Characteristics as Used by Some Studies

Osgood & Stagner (1941)	Dickinson (1954)	Rossi & Inkeles (1957)	Dipboye & Anderson (1959)	Thompson (1966)	Hicks (1966)	Garbin (1967)	f *
Hopefulness	Advancement	General Desirability	Advancement	-	-	-	4
-	Benefits	-	Benefits	-	-	-	2
Sociability	Human Relations	-	Relations with Others	-	Working Relationships	Interpersonal Relations	5
Security	Job Security	Safety	Security	Security	-	-	5
Excitingness Pleasantness	Type of Work	Personal Satisfaction	Interesting Work	Interesting Job Gaining Esteem	-	Intrinsic Nature	6
Financial Return	Salary	Material Position	Salary	Salary	Money	Rewards	7
Short Hours	Working Conditions	-	Working Conditions	-	Working Conditions	Working Conditions	5
Brains	-	-	-	-	Education & Intelligence Needed	Intellectual & Training Requirements	3
Being Noticed	-	Popular Regard	Prestige	Recognition	-	-	4
Freedom	-	-	Independence	Independence Being a Leader Being a Boss Opportunity to Express Ideas	-	Independence	4
-	-	-	-	Helping Others	Service Value of the Job	-	2
-	-	-	-	-	Responsibility	-	1

* f = Frequency of presence of the same factor among studies.

seven factors are used as a reference for locating factors of other studies.

From Table 1, it can be seen that several factors were used by investigators to different degrees. Based on frequency of use, the common factors can be ordered as follows:

1. The Financial Conditions factor appears in all seven studies, though with somewhat different labels. This indicates a very high degree of agreement ragarding the importance of this factor.

2. The Personal Satisfaction factor is second in popularity among investigators. However, a variety of terms are used to label this factor. It appears that the subjective nature of this factor mav contribute to this variation.

3. Security, Working Conditions, and Human Relationships are components of the third group. Agreement on the labels of these factors is apparent though differences still exist.

4. Advancement, Prestige, and Independence are factors in the fourth most popular group in these studies. The prestige factor included here is not the same as that used as the dependent factor in some of these studies. While the meaning of the latter denotes the concept similar to the term "occupational characteristics" used in this study, the meaning of the term included in this table means only the popularity of the job.

5. Levels of Education and Intelligence seem to be considered less important or less interesting among investigators. Only three out of seven studies presented these factors to subjects. This likely resulted from the attitude that occupations require one type of education or

training, and that intelligence is a constant part of all work performance. Hence, the factor has no differentiation power.

6. Benefits, Helping Others or Service Values of the Job, and Responsibility are odds and ends among these studies. In a sense, these factors may be considered as parts of other essential factors in some of these studies.

A cross examination of these studies is considered helpful to see a conceptual consensus among investigators on the occupational characteristics. The information gained from this examination will be used for a comparison with the results of the present study.

Studies on Underlying Factors of Occupational Characteristics. As noted previously, studies trying to identify the underlying factors of occupational characteristics have been less in number than those using predetermined factors. It is also noted that the term used for the collective attributes related to the occupation varies from one study to another and reflects, in many cases, overlapping conceptualizations. For the purposes of relevance to this study, only studies with similar conceptualizations to the present study are included for review.

The first study to be reviewed is not one which identified the underlying factors by an analysis, but rather by a speculation about these factors resulting from a study of "prestige rankings". Thomas (1961) studied the rankings of occupational prestige in Indonesia, which is viewed as being a nonindustrialized nation. He then compared these rankings with the rankings of the same occupations in other six industrialized nations reported in previous studies. Thomas found very high correlations of prestige rankings between Indonesia and the other nations investigated. By comparing characteristics of jobs near the top of the prestige scales with those of jobs near the bottom, Thomas noted that he could identify several factors of occupational prestige, and that the interaction of these factors determines the status that a particular job would acquire in the minds of the public. Six factors of occupational prestige which Thomas speculated were:

> Power dimension.-- An occupation which represents greater power or control over larger numbers of people or over sources of greater wealth is accorded higher prestige than occupations which represent less power or control.
> Financial-reward dimension. -- An occupation which yields higher financial rewards is accorded higher prestige than one yielding lower rewards.
> Crucial-role dimension. -- An occupation which figures crucially in an individual's life at times of crisis (the physician at times of illness, the lawyer when a person is threatened with prison) is more prestigeful than occupations that seldom or never play crucial roles.
> Education dimension. -- An occupation which demands more formal education will be accorded higher prestige than one which demands little education or training.
> Mental-physical dimension. -- An occupation which involves primarily mental-verbal activities is more prestigeful than one involving physical work. (This might be labeled a white-collar and blue-collar dimension.)
> Service-to-society dimension. -- An occupation which contributes more to the society's pursuit of its ideals is more prestigeful than one that contributes less. (p. 565)

Gonyea (1961, 1963) set out to "explore the dimensions by which occupations are preceived" (1961, p. 305). He proposed that factors defined in terms of individual "job perception" would be more psychologically meaningful than various *a priori* job classification. He used Andrew's A-technique (Andrew & Ray, 1957) with 30 job titles and 100 college male freshmen. This technique which Gonyea considered superior to some others, starts the data collection procedure as follows:

> Each S was presented with a Job Perception Blank, consisting of two lists of occupations, side by side, each list containing the same 30 occupational titles, only the different order. S was instructed to select from List B, the list on the right, the name of the job most similar to each job in List A, the list on the left. In order to minimize any bias which might have arisen from the order in which the occupations appeared in List B, three different forms of the Job Perception Blank were employed, differing only with respect to the order of List B. (Gonyea, 1961, p. 306)

By subsequent steps, a 30 X 30 correlation matrix was obtained. A factor analysis was performed on this matrix and revealed 12 primary correlated factors. Correlations among these factors were used in another factor analysis to obtain five orthogonal second-order factors which were to be the basis for Gonyea's interpretation. However, despite the confidence in the technique used, Gonyea could not find an easy-to-interpret factor structure. This difficulty seemed to arise from the fact that Gonyea used job titles which were not descriptive in nature. He listed job titles under each of his first- and second-order factors (Gonyea, 1963). As a result, his study revealed "the system of occupational classification" rather than "the dimensions of occupational prestige" as initially intended. Gonyea's first- and second-order factors with listed job titles are as follows:

First-order Factors

A. Scientific: Chemist, Scientific Research Worker, etc.
B. Business Administration: Office Manager, Personnel Manager, etc.
C. Uninterpretable doublet: Physician, Surgeon.
D. Uninterpretable doublet: Humorist, Novelist.
E. Uninterpretable doublet: Phys. Ed. Teacher, Professional Athlete.
F. Aggressive: Detective, Criminologist, Lawyer.
G. Low Level Routine: IBM Equipment Operator, Radio Operator etc.
H. Social Service: Psychiatrist, Personal Counselor, etc.

J. Uninterpretable doublet: TV Producer, Film Editor.
K. Outdoor: Fish and Wildlife Specialist, Surveyor, etc.
L. Business Contact: Buyer, Interior Decorator, etc.
M. Masculine: Test Pilot, Deep Sea Diver, Auto Mechanic.

Second-order Factors

N. Physical Activity: First-order factors E, M, and K.
P. Business: First-order factors B and L.
Q. Artistic: First-order doublets D and J.
R. Service: First-order factors H, C, and F.
S. Scientific-Technical: First-order factors A, C, K, and G.

(Gonyea, 1963, p. 21)

Under the assumptions that "a) the multidimensional model is appropriate for preference data, and b) the dimensions which result from our analysis are psychologically meaningful" (Terwilliger, 1963, p. 525), Terwilliger undertook a study to "(a) determine the dimensionality of the occupational preferences of college students, and (b) relate other measures of preference and ability to the dimensions which result from analysis of occupational preferences" (p. 541). He used a procedure called "the method of rank order" as suggested by Gulliksen and Tucker (1961) to collect data on occupational preference rankings of 31 occupational titles along with other questionnaires on occupational prestige rankings, the desirability of various job attributes, and general goals of life. Scores from Allport-Vernon Study of Values questionnaire, the Kuder Preference Record - Occupation, Form D, and the Cooperative School and College Ability Test (SCAT) were also obtained. Subjects in the study were 280 male introductory psychology students. The analysis was carried out using a principal-axes factor analysis on the cross products among 46 occupational preference and job attributes variables. Terwilliger obtained 10 factors, the last two of which were given only tentative interpretations. These 10 factors were:

1. Scientific-Technical Occupations,
2. High Income or a Generalized Preference factor,
3. Persuasive Occupations,
4. Teaching Occupations,
5. Artistic Occupations,
6. Outdoor-Scientific Occupations,
7. Artistic-Technical Occupations,
8. Role vs. Activities,
9. Security vs. Creativity, and
10. Interest in Others.

Terwilliger also noted that, by the results of his study, occupational preferences were determined by the activities which were involved in a job rather than by a more general attributes which might characterize the occupation.

Irvine (1969) studied what he called "the dimensions of vocational preference and prestige" with African students. A total of 328 students, 266 males and 62 females, completing the fourth year of secondary education in Rhodesia were his subjects. They were asked to rank 19 job conditions, and to specify their preference and nonpreference on a list of 26 job titles. Intercorrelations among 32 variables of preference and prestige (13 variables were dropped from the analysis due to insufficient number of responses) were then factor analyzed and revealed eight primary factors. They were labelled as follows:

1. Indoor: Office/Clerical,

2. Political Power,
3. Adverse Environment: Physical
4. Teaching Preference,
5. Determination to Succeed,
6. Female Preference,
7. Liking for Cognitive Tasks, and
8. Entrepreneurship.

The second analysis on the correlations among the primary factors revealed two second-order factors with two specific factors: "Female Preference" and "Clerical". No simple structure was obtained among the other six factors. They were interpreted as "a preference for occupations involving a great deal of education and indicates a possible high aspiration dimension", and "high aspirations toward self-sufficiency and independence of action even in the face of severe working conditions" (p. 329).

As a result of the selection, only four studies are reviewed in this section. A summary of the factors from these studies is listed in Table 2. It can be seen from this table that the matching procedure used in Table 1 cannot be applied here. This is due to the lack of similarity among these factors. Most factors differ from study to study. This difference arises, at least partially, from the use of different systems of defining the factors which, in turn, may be a result of different approaches or techniques among these studies. It can be seen that studies by Gonyea, Terwilliger, and Irvine tend to define the factors in terms of occupational classification rather than in terms of occupational description. This, in effect, leaves the im-

Table 2

Factors of Occupational Characteristics Identified in Previous Studies

Thomas (1961)	Gonyea (1961)*	Terwilliger (1963)	Irvine (1969)
1. Power	1. Physical Activity	1. Scientific-Technical	1. Indoor: Office/Clerical
2. Financial Reward	2. Business	2. High Income or Generalized Preference	2. Political Power
3. Crucial Role	3. Artistic	3. Persuasive	3. Adverse Environment: Physical
4. Education	4. Service	4. Teaching	4. Teaching Preference
5. Mental-Physical (White-Collar vs. Blue-Collar)	5. Scientific-Technical	5. Artistic	5. Determination to Succeed
6. Service-to-Society		6. Outdoor-Scientific	6. Female Preference
		7. Outdoor-Technical	7. Liking for Cognitive Tasks
		8. Role vs. Activity	8. Entrepreneurship
		9. Security vs. Creativity	
		10. Interest in Others	

* Second-order factors are used here.

pression that these factors are either-or properties of the occupation and not the continuum along which occupations will be located. As a result, they are not likely to be the factors of occupational perceptions which these studies were intended to reveal. The factors from Thomas' study are descriptive and correspond to the concept of occupational characteristics. However, Thomas' factors cannot be relied on as empirical evidence since they were products of his speculation. Thus, a conclusion about the factors of occupational characteristics cannot be made and indicates that more study is needed.

Two points regarding these studies require attention; the use of high school students as subjects, and the problem of sex differences. Of 14 studies reported, only three -- those by Dipboye and Anderson (1959), by Thompson (1966), and by Irvine (1969) -- used high school students; and only the first two of these were concerned with sex differences. Though Thomas' Indonesian subjects were high school students, the information from other six industrialized nations (he obtained from previous studies) were gathered from adults. Thus,in the second type of study (i.e.,the identification of factors) only Irvine's study used subjects at the high school level. None of the studies based the analysis on sex grouping. The lack of subjects at the high school level in the second type of study suggests the need for further study. This study attempts to do just that. The lack of analysis based on sex groups is another matter, however, and indicates the assumption that the structure of occupational perception is similarly considered by both sexes. Sex differences, if they exist, would likely be due to the quality of the occupation on each factor of this structure. In other words, it is assumed that males and females use the same set of criteria (i.e., occupational characteristic factors) in assessing an occupation. The sex differences lie in the ratings given to the same occupation on the same criterion (i.e., the same characteristic factor). Since this study was concerned with both the structure of occupational perception and the assessment of an occupation, no sex difference was assumed when the analysis focused upon the identification of occupational characteristic factors. However, when the analysis was conducted on the groups of occupations, sex differences were examined.

Summary

This chapter contained two parts. The first part dealt with some theoretical propositions on the developmental concepts of vocational behaviors. This led to the conclusion that a grade nine student who is facing a vocational decision-making task on subject areas in school already has a well-formed perception of the occupation.

The second part of the review examined empirical studies on the perceptions of occupations, and started with a discussion of the selection of a term for attributes related to the occupation. This was followed by two sections reviewing related studies; those using predetermined sets of occupational factors and those identifying the factors. Considerations regarding the subject's grade level and the problem of sex differences were also listed. Finally, the importance of using high school students in this study, and the assumption that there is no sex difference regarding the factor structure of occupational characteristics were stated.

CHAPTER 3

PROCEDURE

The Instrument

The focus of this study was on both structuring and measuring the domain of interest. Osgood's Semantic Differential Technique (SD) was chosen as the method of collecting data. The selection of SD was based on two main points: first, no previous research on this problem has ever tried the SD technique, and second, the technique has been established as having outstanding credibility for these kinds of investigations. In this study, however, since the SD was used to identify the underlying factor structure, the three factors normally used with the SD (i.e., Evaluation, Potency, and Activity) were not followed here. Instead, the procedure initially used by Osgood to reveal these factors was applied. Regarding the nature of the occupational characteristics, it had been expected that more than three factors would be found.

The SD was an outgrowth of research on the measurement of meaning (Osgood, 1952). Since its creation and initial use by Osgood and his associates, the SD has been employed in a tremendous variety of studies, and in recent years hundreds of articles using this technique have appeared in professional journals (Snider & Osgood, 1969, p. v). Some examples of these articles can be found on a problem of measuring occupational perceptions (Beardslee & O'Dowd, 1961; Osipow, 1962; Triandis, 1959). Introductions to this technique can be found in various standard books in research and measurement (for example, see Crano & Brewer, 1973; Cronbach, 1070; and Kerlinger, 1973). In addition, a collection of representative studies in various fields of behavioral science is also available (Snider & Osgood, 1969).

The SD has two kinds of use in educational research methodology (Maguire, 1973). The first is its use as an instrument to measure the connotative meaning of concepts. In this case, the three well known factors (i.e., Evaluation, Potency, and Activity) are represented by a number of adjective scales, and subjects are asked to rate concepts on these chosen scales. Factor scores are calculated by summing the ratings on the scales representing each factor. The second use of the SD is for structuring some attitude domain. In this case, the focus of the research is to try to bring order to the connotative meaning of words (i.e., the SD scales). The SD scales are used to collect ratings on certain concepts in the domain of interest relative to a set of pertinent bipolar adjective scales. Correlations are calculated between scales and the resulting matrix is factor analyzed. The identified factors provide basis for structuring the domain. This latter use of the SD is in exploration rather than measurement.

The use of the SD as an instrument of measuring the domain of interest (i.e., the use of the technique along with its three factors) is quite popular in the literature. In recent years, its use as a structuring instrument is being realized. The procedure concerning the latter use can be found in Osgood's original works and those of Maguire (1968, 1973). It was expected that the use of the SD, along with the design of the present study, would result in an effective approach to the problem of interest.

In using the SD technique, the meaning of a concept is regarded as its location in a multidimensional space. A person's perception toward that concept are the projections on these dimensions. Thus, the technique requires that an instrument consist of two components: scales and concept. Scales are a number of bipolar adjective pairs chosen from a large number of such pairs for a particular research purpose. Concepts are stimuli that will be rated, by subjects, with the bipolar adjectives on rating scales. Both the concepts and scales must be relevant to the research problem and be well recognized by subjects. In the present study, the concepts are occupational titles and the scales are bipolar adjective pairs that describe characteristics of the occupation.

Details regarding the concepts and scales are presented in subsequent sections.

The Concepts

It was realized that a study of this type should present the subjects with as many concepts as possible. The occupational titles must cover the broad range of the occupational world. However, there are a great number of occupations in today's society, and many of them are not known by grade nine students. Thus, the occupations must be carefully selected to represent the population, and at the same time, be familiar to the subjects. The limit of testing time was another problem and considerably reduced the number of occupations in this study. Since there were two test sessions in the study -- Phase 1 and Phase 2 to be described later -- and time limits were not the same due to constraints imposed by school schedules and the design of the study, the number of occupations used was not the same in both phases.

In this study occupational titles were chosen from Safran's list of occupations ([illegible]ran, 1969). Safran classifies an occupation into seven areas of interest and provides a large number of occupational titles under 21 pair combinations of these areas. The seven areas of interest proposed by Safran are: economic, technical, outdoor, service, humane, artistic, and scientific. There are more than 200 titles in the list. Safran's list was chosen mainly because it was prepared for use with Canadian high school students (Safran, 1969, p. 5), especially by grade nine and grade twelve students. This feature is relevant to the study.

Subjects in Phase 1 were divided into two subgroups. Each group rated different sets of occupational titles. Two lists of 21 occupational titles each were prepared for this phase. In the second phase, one list of 30 titles was used. These three lists were stratified random samples of the Safran's entire list, with some adjustments and replacements. The adjustments and replacements were used in case the randomized titles appeared not familiar to most students. However, this was done by personal judgment rather than by a check with students.

Lists of occupational titles used are given in Table 3 for Phase 1, and Table 4 for Phase 2.

The Scales

The bipolar adjectives used in Phase 1 were screened through the following steps:

1. A vast amount of the SD literature was reviewed regarding the scales used. As a result, 43 adjective pairs considered appropriate

Table 3

Occupational Titles Used in Phase 1

Area No.*	Group 1	Group 2
1-2	Airplane Pilot	Watchmaker
1-3	Botanist	Cattle Inspector
1-4	Cook	Telephone Operator
1-5	Salesman	Personnel Clerk
1-6	Cartoonist	Advertising Man
1-7	Economist	Zoologist
2-3	Tree Surgeon	Fisherman
2-4	Janitor	Bus Driver
2-5	Service Station Attendant	Repairman
2-6	Tailor	Toolmaker
2-7	Electronics Worker	Optometrist
3-4	Policeman	Soldier
3-5	Athletic Coach	Travelling Guide
3-6	Sports Announcer	Floral Designer
3-7	Veterinarian	Chemist
4-5	Mailman	Airline Stewardess
4-6	Librarian	Beautician
4-7	Pharmacist	Astronomer
5-6	Dressmaker	Actor
5-7	Sociologist	Nurse
6-7	Architect	Engineer

* Area of interest: 1-Economic, 2-Technical, 3-Outdoor, 4-Service, 5-Humane, 6-Artistic, and 7-Scientific.

Table 4

Occupational Titles Used in Phase 2

Area No.*	Title	Area No.	Title
1-2	Airplane Pilot	2-7	Mechanic
1-3	Cattle Inspector	3-4	Policeman
1-4	Cook		Soldier
	Telephone Operator	3-5	Athletic Coach
1-5	Salesman	3-6	Sports Announcer
	Lawyer	3-7	Chemist
	Reporter	4-5	Mailman
	Secretary	4-6	Librarian
1-6	Cartoonist	4-7	Astronomer
1-7	Optometrist	5-6	Dressmaker
2-3	Fisherman		Actor
2-4	Bus Driver	5-7	Nurse
2-5	Service Station Attendant		Doctor
			Teacher
2-6	Tailor	6-7	Dentist
2-7	Electronics Worker		

* Due to the limited number of occupations to be used and students' background, some areas have more titles included than the others.

for the present study were gathered. These pairs were then printed on a sheet of paper along with seven occupational titles representing seven areas of interest. The list was given to 12 staff members of the Division of Educational Research Services, the University of Alberta. They were asked to consider and check the pairs of words which they considered appropriate for describing the occupation. Suggestion of other words was also invited. Results from this procedure were used to improve the original list. As a result, 54 adjective pairs were collected for the next step.

2. A pilot study was conducted in February, 1975. The main purpose was as a feasibility of the present study. The subjects were 32 male and 34 female University of Alberta undergraduate students in Educational Psychology. Results from this study showed that the main study on this problem was possible. The analysis revealed a good structure of five factors which made use of 28 adjective pairs. These pairs were retained. Among the remaining 26 pairs, some were adapted for further use. In all, 36 pairs were retained from this pilot study. It should be noted that, though the analysis of this study revealed a good factor structure, it was not considered as being definite due to limitations imposed on the design of the study (e.g., small sample size of subjects and occupations, and the selective nature of subjects).

3. The SD literature was then re-examined. At this time the experience gained from the pilot study guided the review. As a result, 20 new adjective pairs were further gathered or adapted from previous studies. At this time there were 56 adjective pairs.

4. The 56 pairs were printed on a sheet of paper and presented

to a group of 37 grade nine students at Hardisty Junior High School in Edmonton in November, 1975. They were asked to check whether they knew the meaning of the word in each pair. Frequency of recognition was obtained and the pairs being checked as known by at least 34 students were retained. As a result, 41 pairs were kept for further steps.

Since students at this school were also used in Phase 1, it must be noted that these 37 students did not take part in Phase 1 test session.

The 41 adjective pairs retained from the last step were used in Phase 1. Results from the analysis in Phase 1 dictated the selection of these pairs for Phase 2. The selection of adjective pairs for Phase 2 is described in chapter 4.

The list of bipolar adjective pairs used in Phase 1 is given in Table 5. Other lists used in Steps 2 and 4 are given in Tables 67 and 68, Appendix C.

Subjects

Subjects in this study were grade nine students in two junior high schools in Edmonton, Alberta. A group of 267 students at Hardisty Junior High School completed the questionnaire for Phase 1 on January 19, 1976. Another group of 93 students at Balwin Junior High School took part in Phase 2 data collection on March 5, 1976. In both testing sessions, classroom teachers were used to administer the questionnaire. Most of these students were in the age range from 14 years and one month to 15 years and three months (89.13% for the first group and 80.64% for the second). This suggested very comparable age groups in the two schools. However, the second group was tested 46 days after

Table 5

Bipolar Adjective Pairs Used in Phase 1 *

creative - uncreative
taking - giving
necessary - unnecessary
perfect - imperfect
reliable - unreliable
skilled - unskilled
sociable - unsociable
well paid - poorly paid
safe - dangerous
successful - unsuccessful
rough - smooth
powerful - powerless
new - old
meaningful - meaningless
interesting - uninteresting
enjoyable - boring
good - bad
important - unimportant
kind - cruel
nice - awful
serving - receiving
weak - strong
stable - unstable
dark - bright
easy - difficult
happy - sad
masculine - feminine
pleasant - unpleasant
rich - poor
simple - complex
selfish - unselfish
valuable - worthless
secure - insecure
superior - inferior
tense - relaxed
temporary - permanent
dependent - independent
honest - dishonest
exciting - dull
demanding - undemanding
clean - dirty

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* The order of pairs here is the same as that used in the questionnaire booklet but the polar directions in the booklet were random.

the first group and the age was recorded on the day of testing. Details of the administration of questionnaires are presented in the next section. Since the two schools involved in the study were not systematically different from any other school in the city regarding their size, staff, and administration, it could be assumed that the students were in the same population group as those in other schools. So, it was reasonable to view these students as being representatives of students at the same grade level in Edmonton. By inspecting some personal information regarding parental occupations which the students were asked to fill in, it was concluded that most of them were from middle-class families, reflecting the greater portion of this social group in the community. Details about subgroup size and age distribution of these students are given in Table 6.

There are two phases in this study regarding data collection and analysis. Phase 1 made use of the data to define the factors of occupational characteristics. Scales measuring factors selected from this phase were used to collect data in Phase 2. In Phase 2, the analysis was carried out to group occupations based on their similar profiles on the characteristic factors found in Phase 1. Then a representative profile was constructed to describe the general characteristic pattern of each occupational group.

Details of data collection and analysis in each phase are given in the following sections.

Phase 1 - Defining the Characteristic Factors

Procedure. The SD questionnaire used in this phase consisted of 41 adjective pairs and was used with two lists, each with 21 occupa-

Table 6

Age Distribution of Students in Both Phases *

Age (yr/m)	Phase 1					Phase 2		
	Group 1	Group 2	Male (M)	Female (F)	Total	Male (M)	Female (F)	Total
13/1 -13/3	1	-	-	1	1	-	-	-
13/4 -13/6	1	1	-	2	2	1	-	1
13/7 -13/9	2	-	1	1	2	1	-	1
13/10-14/0	4	4	3	5	8	1	-	1
14/1 -14/3	33	21	31	23	54	6	1	7
14/4 -14/6	23	24	21	26	47	9	6	15
14/7 -14/9	27	34	30	31	61	17	5	22
14/10-15/0	33	32	31	34	65	15	5	20
15/1 -15/3	4	7	4	7	11	7	4	11
15/4 -15/6	3	2	3	2	5	2	1	3
15/7 -15/9	-	6	6	-	6	4	-	4
15/10-16/0	1	-	-	1	1	1	1	2
16/1 -16/3	2	-	2	-	2	2	1	3
16/4 -16/6	-	-	-	-	-	2	-	2
16/7 -16/9	1	1	2	-	2	-	-	-
16/10-17/0	-	-	-	-	-	-	-	-
17/1 -17/3	-	-	-	-	-	-	-	-
17/4 -17/6	-	-	-	-	-	-	1	1
N	M-68 F-67	M-66 F-66	134	133	267	68	25	93
Average (year)	14.6	14.7	14.7	14.6	14.6	14.9	15.0	14.9
SD (month)	5.91	5.20	6.13	4.89	5.59	6.92	7.99	7.27

* Ages of students in Phase 2 were recorded 46 days after those in Phase 1.

tional titles. A questionnaire booklet, composed of instruction pages, personal information page, and answer sheets, was provided. Each answer sheet had an occupational title printed on the top of the page followed by the 41 adjective pairs. Each pair appeared at the two extremes of a seven-point rating scale, as following:

CARTOONIST

good ___:___:___:___:___:___:___ bad
difficult ___:___:___:___:___:___:___ easy
old ___:___:___:___:___:___:___ new

The order of these adjective pairs on the answer sheet and their continuum directions were randomly assigned to avoid the effect of any response set. However, all sheets had the same order and continuum directions. Because of the large number of occupational titles, with the accompanying adjective pairs, and the students' limited time, the students were asked to rate only five of the 21 titles. Rotation of the titles among students within the same subgroup was used to have approximately equal number of students per occupation.

Two subgroups of students were used with the two sets of occupational titles. The procedure to assign the students into subgroups was done at the testing time. It had been planned that students in the same classroom be assigned equally into both subgroups to avoid class bias. To achieve this plan, the booklets for both subgroups were prearranged together in alternate order: G1, G2, G1, G2, ... , and then were distributed to all students by row. This procedure was successful as group randomization since, for all 10 classes, the number of students in subgroups and the proportion of boys and girls between subgroups were comparable. This can be seen in Table 6.

For all 10 classes, teachers administered the questionnaire. The procedure started with booklet distribution. Then the teacher read aloud the instructions printed on the cover of the booklet and asked the students to follow the instructions. A question period followed and then the students started completing the questionnaire. The teachers had been given a sample booklet and some instructions for administration prior to the test date. They understood the procedure well. Thus, no difference among class administration was assumed. A time limit was not used. However, due to the length of the class period, they had 50 minutes for the whole session. All students finished the questionnaire within allotted time. Working time ranged from nine to 35 minutes.

A sample of the questionnaire booklet with related materials is given in Appendix C.

Analysis. The following steps were carried out with the responses in this phase:

1. Individual answers on each scale for each occupation were scored. The left extreme of the scale was given a score of one, and the right extreme, seven, regardless the direction of the continuum. Data were then recorded separately for each subgroup. They were presented in the form of a three-dimensional matrix having the order of subject X occupation X scale, which the actual size was 135 X 5 X 41 for the first subgroup and 132 X 5 X 41 for the second. For the analysis, these two matrices were "strung out" into two-dimensional matrices (Maguire, 1973, p. 301) with subject and occupation combined into one

dimension. The resulting matrices were of order 675 X 41 for the first and 660 X 41 for the second subgroups.

2. The two data matrices obtained from the first step were used to compute intercorrelations among scales. Both correlation matrices were of order 41 X 41. These two matrices were subject to a principal-axes factor analysis to define the factors of occupational characteristics. Details of the analysis are presented along with results in chapter 4. The two correlation matrices are given in Tables 42 and 43, Appendix A.

3. After the factor analysis, scales which measure the characteristic factors were selected and used in a new questionnaire. This questionnaire was used with a new list of 30 occupational titles, as shown in Table 4, to collect data in Phase 2.

Phase 2 - Grouping a Sample of Occupations

Procedure. Regarding the detail given in chapter 4, 18 scales measuring six characteristic factors from Phase 1 were retained for the second phase. A questionnaire was compiled using these scales with 30 occupational titles. Instructions and personal information pages were included. The appearance of the adjective pairs on the rating scale was the same as that of the first questionnaire. However, since the directions of the continuum and the factor which each scale measured were known at this time, scales were grouped according to the same factor in the same sequence. The factors were ordered from one to six on all answer sheets. To eliminate a sequence effect due to factor, six answer sheet forms were prepared, each beginning with one of the six factors. This resulted in six different starting points of rating among answer sheets. Moreover, among 18 scales, the directions of the continuum were randomly assigned but remained the same for each scale among six forms. Regarding the design of the analysis in this phase, a student had to rate all 30 titles. So, each questionnaire consisted of 30 answer sheets with six different forms. An attempt had been made to have comparable numbers of these forms in the same questionnaire, and in a random order.

Though the 30 titles were in the same order for all questionnaires, these questionnaires did not always start with the same title. Each title had equal probability to be the first, the second, the third, etc., in the questionnaire. In effect, there were 30 different starting points for rating regarding the titles. These questionnaires were then randomly sorted before distribution to the class.

Only one group of students was used at this time. The administration peocedure was the same as that used in Phase 1 and was also done by the classroom teachers. These teachers were also prepared for the session in the same way as those in Phase 1. Thus, no difference between administrations was assumed. Since the number of ratings per student was more than that in the first phase, a double classroom period, approximately 90 minutes, was used for the testing session. In all, four classes were used. All students finished the questionnaire in time. Inspection of the answers later revealed some systematic responses, these answers were discarded from the analysis.

A sample of the questionnaire booklet and related materials is given in Appendix C.

Analysis. The following steps were carried out:

1. The individual rating on each scale for each occupation was scored. A key to scoring each scale was based upon the results of the factor analysis in Phase 1. The scores range between one and seven. The individual scores were then used to compute an average among scales of the same factor, for each occupation rated by the same student. There were 93 students, 18 scales, 6 factors, and 30 occupations in this phase. The individual-score matrix was of order 93 X 18 X 30, and the average-score matrix, 93 X 6 X 30. Since the analysis in this phase was also based on sex groups, and there were 68 boys and 25 girls in this group, the average-score matrix was broken into two matrices of order 68 X 6 X 30 for boys and 25 X 6 X 30 for girls. As had been done in Phase 1, the three-dimensional matrices were then converted into two-dimensional matrices for further analysis. Subject and occupation were combined into the same dimension. The resulting matrices were a 2790 X 18 matrix for the individual-score matrix, and a 2790 X 6 for the average-score matrix for the total group. In the average-score matrices for each sex, subject and factor were combined. The two-dimensional average-score matrices were of order 408 X 30 for boys and 150 X 30 for girls.

2. The 2790 X 18 matrix was used to compute intercorrelations among 18 scales, and the 2790 X 6 matrix, among six factors. The 18 X 18 correlation matrix was used with a principal components analysis to group the scales. This replicated procedure was carried out to see whether the initial factor structure still existed. This was viewed as being a cross validation of the scales in this study. The 6 X 6 correlation matrix was obtained to check the existing inter-factor cor-

relations which might have resulted from assigning a unit weight to each scale. For the two average-score matrices for boys and girls, intercorrelations among occupations were computed. The two 30 X 30 correlation matrices were used with a principal components analysis. This analysis was carried out to group occupations regarding their characteristics profiles.

The matrices of intercorrelations among scales and among occupations are given in Tables 49-51, Appendix B. The inter-factor correlation matrix will be presented with a discussion in chapter 5.

Summary

In this chapter, the construction of the instruments, and the data collection and analysis procedures have been described. Details and results of the analysis in Phase 1 are presented in chapter 4, and those in Phase 2 are presented in chapter 5.

CHAPTER 4

PHASE 1 - FACTORS OF OCCUPATIONAL CHARACTERISTICS

This chapter presents results from the first part of the study -- the identification of characteristic factors of occupations. No sex difference was assumed regarding the characteristic structure, thus no sex grouping was used in the analysis. As detailed in chapter 3, there were two randomly assigned subgroups, both consisted of comparable numbers of boys and girls. The analysis procedure started with subgroups. Results from subgroups were compared to see whether the structure remained consistent across groups and to decide on the next step of the analysis procedure. The goal was to obtain one set of characteristic factors and their measuring scales for use in Phase 2.

The following is the step-by-step analysis procedure.

A Factor Analysis of Scales

Subgroup Analysis. The analysis started with the 41 X 41 correlation matrix, as described in chapter 3, for Subgroup 2 as follows:

1. A principal components analysis (Mulaik, 1972) was carried out with the matrix. Components corresponding to eigenvalues greater than one were retained for the varimax rotation. As a result, eight components were kept for the rotation. The total variance accounted for by these components was 58.27%.

An inspection on the component structure showed that only the first six components had two or more scales with substantial loadings. It was then decided that only six components or factors would be sufficient for the next step.

2. Communalities ($\underline{h}^2_j$) of 41 variables based on the first six components were computed and then replaced the 1's in the diagonals of the correlation matrix. This matrix was used with a principal-axes factor analysis (Mulaik, 1972). Six factors were retained though there were only four eigenvalues greater than one. The percentage of total variance accounted for was 46.50. Inspection on the varimax rotated structure of the six factors indicated that many scales did not load highly and had very low communalities. A decision was made to retain those scales having loadings higher than .400. This resulted in decreasing the number of scales from 41 to 28.

3. The correlation matrix of the remaining 28 variables with the same inserted communalities as used in the second step, was subject to another principal-axes factor analysis. Six factors were retained. Only four factors had eigenvalues greater than one. The total variance accounted for was 54.27%. The varimax rotation was again performed. The resulting factor loading matrix indicated that more variables should be discarded. Seventeen scales with communalities higher than .500, five factors, and one scale which, though having communality lower than .500, had one substantial loading of .677, were retained for the next step.

4. The correlation matrix of the 18 variables with communalities based on five factors retained from the third step was used with a principal-axes factor analysis. Five factors were retained, this time with three factors having eigenvalues greater than one. The total variance accounted for was 59.78%. This time, the varimax rotated factors revealed a well-formed structure with at least two scales belon-

ging to each factor. At this point, it was decided that the analysis for this subgroup be terminated.

The next analysis was on the correlation matrix from the first subgroup. The step-by-step procedure was similar to that used with the second subgroup but differed in detail as follows:

1. A principal components analysis was also used with the original correlation matrix. This time only seven components had eigenvalues greater than one. They were retained for the varimax rotation. The percentage of total variance accounted for by these components was 56.40. Inspection of the loading matrix showed only six substantial components. So communalities based on these six components were computed and used with the correlation matrix in the next step.

2. The matrix was then used with a principal-axes factor analysis. Though only four factors had eigenvalues greater than one, six factors were retained for rotation. The total variance accounted for was 47.14%. Inspection on the factor matrix to discard irrelevant variables was made. Twenty-nine scales with communalities higher than .400 were retained. It was also decided to reduce the number of factors from six to five.

3. The correlation matrix of the 29 variables with inserted communalities based on five factors was used with a principal-axes factor analysis again. Five factors were retained with four having eigenvalues greater than one. The percentage of total variance accounted for was 51.50. From the varimax rotated factor matrix, scales with communalities higher than .600, and scales with communalities between .400 and .600 having substantial loadings on one factor were retained. The

number of remaining scales was reduced to 20.

4. The correlation matrix of the selected variables with inserted communalities based on five factors was factor analyzed. Five factors were retained with three having eigenvalues greater than one. The total variance accounted for was 58.17%. At this time, the rotated factor structure was well defined. It was decided to terminate the analysis for this subgroup.

Matrices of factor loadings from the last step of both subgroups are given in Tables 7 and 8. Scales grouped under factors in each subgroup are given in Table 9. Those factor matrices from the transitional steps are given in Tables 45-48, Apendix A.

As a result of subgroup analysis, a total of 22 scales were retained. Sixteen scales were common between subgroups, four belonged to only Subgroup 1, and two to Subgroup 2. A close inspection on the grouping of these scales, shown in Table 9, revealed a very similar factor structure between subgroups. The total variance accounted for was 58.17% for the first subgroup and 59.78% for the second subgroup; this was very comparable. Thus, it was concluded that the analysis revealed the same factor structure for both subgroups. Since there was no unique factor appearing in one subgroup, it was decided to combine the data into one single group for the next step. The goal was to obtain only one set of characteristic factors.

Combined Group Analysis. The two data matrices from the subgroups were combined into one matrix. Only 22 scales were used. Scores from other scales were discarded. The remaining data from the 22 scales were in a matrix of order 267 X 5 X 22 or 1335 X 22. A 22 X 22 correla-

Table 7

Varimax Rotated Factors of Selected Twenty Scales - Subgroup 1

Scale	I	II	III	IV	V	$\underline{h}^2_j$
uncreative - creative	-.580	.043	-.236	-.051	.181	.429
unnecessary - necessary	-.069	.751	-.092	-.075	-.170	.612
poorly paid - well paid	-.268	.197	-.670	.008	.048	.562
dangerous - safe	-.016	-.082	-.005	-.088	.623	.403
successful - unsuccessful	.412	-.187	.548	.178	-.063	.541
rough - smooth	-.059	-.049	-.148	-.139	.636	.451
powerful - powerless	.195	-.171	.465	.224	.427	.516
meaningless - meaningful	-.290	.595	-.238	-.165	-.022	.522
interesting - uninteresting	.817	-.193	.212	.184	.074	.789
boring - enjoyable	-.818	.206	-.202	-.153	-.066	.780
good - bad	.591	-.383	.212	.350	.030	.665
unimportant - important	-.246	.723	-.181	-.249	-.136	.696
kind - cruel	.265	-.241	.060	.586	-.178	.507
nice - awful	.403	-.275	.131	.598	-.136	.631
weak - strong	-.164	.273	-.283	-.358	-.464	.525
unpleasant - pleasant	-.565	.204	-.284	-.361	.118	.586
rich - poor	.278	-.162	.709	.120	-.062	.625
worthless - valuable	-.267	.644	-.297	-.285	-.082	.662
secure - insecure	.123	-.318	.437	.419	.014	.483
exciting - dull	.709	-.200	.208	.181	.177	.650
Total Variance	18.502%	13.062%	11.398%	8.243%	6.967%	58.172%
Commom Variance	31.806%	22.454%	19.594%	14.170%	11.976%	

Table 8

Varimax Rotated Factors of Selected Eighteen Scales - Subgroup 2

Scales	I	II	III	IV	V	$\underline{h}_j^2$
unnecessary - necessary	-.033	.750	.154	-.109	-.081	.605
poorly paid - well paid	-.149	.227	.651	-.161	.123	.538
dangerous - safe	.054	-.042	.036	-.157	.688	.505
successful - unsuccessful	.336	-.356	-.508	.141	-.162	.544
rough - smooth	-.047	-.080	.078	-.133	.709	.535
meaningless - meaningful	-.307	.631	.240	-.138	.017	.569
interesting - uninteresting	.727	-.282	-.235	.208	.023	.707
boring - enjoyable	-.812	.208	.200	-.191	-.013	.780
good - bad	.523	-.487	-.189	.322	-.038	.652
unimportant - important	-.200	.795	.159	-.150	-.053	.722
kind - cruel	.164	-.144	-.122	.696	-.168	.575
nice - awful	.323	-.244	-.075	.714	-.167	.707
sad - happy	-.433	.131	.156	-.470	.261	.518
unpleasant - pleasant	-.513	.138	.208	-.439	.210	.562
rich - poor	.256	-.175	-.740	.144	-.131	.682
simple - complex	-.191	.268	.413	.032	-.178	.311
worthless - valuable	-.253	.663	.288	-.142	-.052	.610
exciting - dull	.717	-.144	-.248	.178	.101	.638
Total Variance	16.663%	15.654%	10.433%	10.035%	7.000%	59.784%
Commom Variance	27.872%	26.184%	17.451%	16.785%	11.709%	

Table 9

Scales and Reflected Loadings within Each Factor *

Factor	Subgroup 1	Loading	Subgroup 2	Loading
I	enjoyable-boring	.818	enjoyable-boring	.812
	interesting-uninteresting	.817	interesting-uninteresting	.727
	exciting-dull	.708	exciting-dull	.717
	good-bad	.591	good-bad	.523
	creative-uncreative	.580	pleasant-unpleasant	.513
	pleasant-unpleasant	.565	happy-sad	.433
	successful-unsuccessful	.412		
	nice-awful	.403		
II	unnecessary-necessary	.751	unimportant-important	.795
	unimportant-important	.723	unnecessary-necessary	.750
	worthless-valuable	.644	worthless-valuable	.663
	meaningless-meaningful	.595	meaningless-meaningful	.631
	bad-good	.383	bad-good	.487
III	rich-poor	.709	poor-rich	.740
	well paid-poorly paid	.670	poorly paid-well paid	.651
	successful-unsuccessful	.548	unsuccessful-successful	.508
	powerful-powerless	.465	simple-complex	.413
	secure-insecure	.437		
IV	nice-awful	.598	nice-awful	.714
	kind-cruel	.586	kind-cruel	.696
	secure-insecure	.419	happy-sad	.470
			pleasant-unpleasant	.439
V	rough-smooth	.636	rough-smooth	.709
	dangerous-safe	.623	dangerous-safe	.688
	strong-weak	.646		
	powerful-powerless	.427		

* Loadings lower than .400 are not included in the table except one (good-bad).

tion matrix was obtained from this data matrix for the following steps:

1. A principal components analysis was carried out with the correlation matrix. Four components had eigenvalues greater than one. However, because of the previous analyses, five components were retained. Communalities of scales based on these five components were used to replace the l's in the matrix diagonals. The correlation matrix was then factor analyzed for five factors and the varimax rotation procedure was applied. The total variance accounted for by these factors was 58.06%.

An inspection on the resulting factor matrix showed that, though the structure was essentially well defined, there were still some scales having more than one substantial loading. This seemed to indicate the likely possibility of having more than five factors. So the same correlation matrix was factor analyzed once more for six factors. At this time, the percentage of total variance accounted for was 60.02.

The varimax rotated factors from this analysis was generally better than those in the first analysis. However, it was found from the factor matrix that two scales -- good-bad and sad-happy -- had high loadings on more than one factor, and one scale -- secure-insecure -- had a very low communality. These three scales were considered not relevant to these six factors and were thus discarded from the next analysis.

2. The correlation matrix of the remaining 19 scales was then factor analyzed. Estimated communalities based on six components from a principal components analysis were used with the matrix. Six factors were retained with four having eigenvalues greater than one. The percentage of total variance accounted for was 63.29.

An inspection on the varimax rotated factor structure of the new six factors revealed that they were well defined. Judging from the loadings higher than .400, no scale belonged to more than one factor. All scales, except one (i.e., creative-uncreative) had communalities higher than .540. Only one scale (i.e., successful-unsuccessful) had a substantial loading lower than .550. It was concluded that a simple well-defined structure among these 19 scales was achieved. Thus, no further analysis was carried out on these data.

Tables 10 and 11 show the factor structures of the 22 scales for five and six factors respectively. Table 12 shows the factor structure of the 19 scales. The 19 scales are grouped under each of the six factors in Table 13. The correlation matrix of the 22 scales in the combined group is given in Table 44, Appendix A.

The Characteristic Factors and a New Questionnaire Booklet

The final result of the analysis, as shown in Table 13, was a very clearly defined characteristic structure. Factor I is entirely concerned with the intrinsic nature of the occupation; it was termed "Personal Satisfaction". Factor II is concerned with an evaluation regarding the general benefits to society. This ideal-oriented factor was labelled "Values to Society". Factor III focuses upon the material position of the occupation and the level of spiritual tolerance one would encounter in it. Thus, the label "Life Security" seems to fit well. Factor IV is evidently a general impression of the occupation. This factor corresponds to the popular term "Prestige" (the popularity of an occupation) or "General Impression", and thus it was so termed. Factor V seems to be the other aspect of personal security -- the

Table 10

Five Varimax Rotated Factors of Twenty-Two Scales - Combined Group

Scale	I	II	III	IV	V	$\underline{h}^2_j$
uncreative - creative	.554	.052	.294	−.099	.135	.424
unnecessary - necessary	.037	.762	.125	−.092	−.145	.628
poorly paid - well paid	.197	.196	.710	−.098	.057	.594
dangerous - safe	−.028	−.064	.060	−.228	.651	.485
successful - unsuccessful	−.353	−.252	−.553	.232	−.034	.549
rough - smooth	.027	−.070	.157	−.254	.638	.502
powerful - powerless	−.146	−.188	−.401	.228	.505	.523
meaningless - meaningful	.292	.639	.233	−.168	−.031	.577
interesting - uninteresting	−.772	−.231	−.213	.242	.101	.764
boring - enjoyable	.783	.190	.192	−.264	−.114	.769
good - bad	−.535	−.432	−.199	.377	.062	.658
unimportant - important	.196	.762	.173	−.222	−.160	.723
kind - cruel	−.199	−.220	−.059	.619	−.169	.503
nice - awful	−.325	−.267	−.092	.684	−.091	.661
weak - strong	.113	.267	.235	−.334	−.547	.550
sad - happy	.385	.114	.189	−.550	.109	.511
unpleasant - pleasant	.502	.140	.246	−.509	.068	.596
rich - poor	−.256	−.145	−.756	.167	−.048	.688
simple - complex	.278	.241	.444	.080	−.162	.365
worthless - valuable	.234	.662	.309	−.226	−.126	.655
secure - insecure	−.107	−.322	−.391	.352	.046	.394
exciting - dull	−.704	−.162	−.208	.224	.194	.654
Total Variance	15.350%	13.023%	11.505%	10.821%	7.365%	58.064%
Common Variance	26.436%	22.428%	19.815%	18.637%	12.684%	

Table 11

Six Varimax Rotated Factors of Twenty-Two Scales - Combined Group

Scale	I	II	III	IV	V	VI	h^2_j
uncreative - creative	.547	.050	.311	-.082	.131	.039	.424
unnecessary - necessary	.041	.766	.112	-.085	-.092	-.115	.629
poorly paid - well paid	.183	.187	.708	-.093	.104	-.119	.604
dangerous - safe	.006	-.047	-.000	-.099	.716	.116	.538
successful - unsuccessful	-.372	-.263	-.505	.129	-.169	.215	.554
rough - smooth	.056	-.058	.104	-.136	.700	.101	.536
powerful - powerless	-.210	-.228	-.267	.010	.197	.603	.569
meaningless - meaningful	.298	.642	.223	-.141	.024	-.088	.579
interesting - uninteresting	-.784	-.236	-.212	.187	.040	.112	.764
boring - enjoyable	.809	.206	.165	-.161	-.006	-.170	.779
good - bad	-.550	-.429	.193	.339	-.011	.140	.659
unimportant - important	.216	.771	.138	-.166	-.052	-.197	.730
kind - cruel	-.195	-.179	-.108	.703	-.142	-.009	.597
nice - awful	-.336	-.236	-.115	.715	-.124	.092	.718
weak - strong	.183	.303	.105	-.128	-.240	-.612	.585
sad - happy	.434	.125	.122	-.409	.279	-.233	.519
unpleasant - pleasant	.547	.151	.186	-.372	.232	-.233	.603
rich - poor	-.248	-.137	.744	.140	-.122	.168	.697
simple - complex	.234	.217	.510	-.030	-.234	.005	.417
worthless - valuable	.241	.661	.296	-.205	-.049	-.170	.656
secure - insecure	-.131	-.325	-.344	.280	-.091	.259	.394
exciting - dull	-.715	-.165	-.208	.180	.129	.153	.654
Total Variance	16.380%	13.147%	10.341%	8.146%	6.510%	5.492%	60.016%
Common Variance	27.293%	21.905%	17.230%	13.573%	10.847%	9.150%	

Table 12

Varimax Rotated Factors of Selected Nineteen Scales - Combined Group

Scale	I	II	III	IV	V	VI	$\underline{h}_j^2$
uncreative - creative	.552	.060	.309	-.075	.114	-.058	.426
unnecessary - necessary	.035	.769	.103	-.082	-.087	.127	.633
poorly paid - well paid	.184	.188	-.688	-.078	.136	.181	.601
dangerous - safe	.011	-.040	.007	-.087	.738	-.136	.573
successful - unsuccessful	-.386	-.272	-.489	.112	-.167	-.211	.548
rough - smooth	.067	-.058	.107	-.126	.714	-.100	.556
powerful - powerless	-.208	-.224	-.255	.013	.182	-.648	.611
meaningless - meaningful	.294	.657	.218	-.126	.024	.084	.589
interesting - uninteresting	-.787	-.237	-.196	.175	.028	-.134	.763
boring - enjoyable	.820	.209	.145	-.132	.001	.178	.786
unimportant - important	.214	.778	.127	-.155	-.041	.210	.737
kind - cruel	-.188	-.171	-.106	.825	-.139	.001	.776
nice - awful	-.353	-.241	-.105	.710	-.151	-.129	.737
weak - strong	.191	.316	.094	-.112	-.237	.603	.578
unpleasant - pleasant	.566	.180	.186	-.308	.220	.195	.569
rich - poor	-.257	-.149	-.730	.117	-.142	-.203	.696
simple - complex	.234	.224	.584	-.040	-.297	-.084	.543
worthless - valuable	.262	.671	.280	-.166	-.053	.142	.647
exciting - dull	-.724	-.173	-.188	.162	.116	-.167	.657
Total Variance	16.799%	14.036%	10.903%	7.915%	7.530%	6.112%	63.294%
Common Variance	26.541%	22.175%	17.226%	12.505%	11.896%	9.656%	

Table 13

A Final Set of Nineteen Scales

Grouped under Each Characteristic Factor

Characteristic Factor	Adjective Pair*	Loading
I Personal Satisfaction	boring - enjoyable	.820
	uninteresting - interesting	.787
	dull - exciting	.724
	unpleasant - pleasant	.566
	uncreative - creative	.552
II Values to Society	unimportant - important	.778
	unnecessary - necessary	.769
	worthless - valuable	.671
	meaningless - meaningful	.657
III Life Security	poor - rich	.730
	poorly paid - well paid	.688
	simple - complex	.584
	unsuccessful - successful	.489
IV Prestige or General Impression	cruel - kind	-.825
	awful - nice	-.710
V Physical Security	dangerous - safe	.738
	rough - smooth	.714
VI Power	powerless - powerful	.648
	weak - strong	.603

* Scale directions have been aranged to have preferable extremes on the right-hand side.

"Physical Security", and it was so called. The last factor, Factor VI, is concerned with the influence or strength of the occupation and was labelled "Power".

In effect, 19 adjective pairs measuring six characteristic factors of the occupation were available for data collection in Phase 2. As stated earlier, the purpose of the next phase of this study was to group a sample of occupations, 30 in all, regarding their characteristic patterns. In other words, occupations which had similar profiles to these characteristics would be grouped together by the analysis, no matter how high or low the profile levels.

A new questionnaire booklet, as described in chapter 3, was then compiled. Due to a loading lower than .500, one adjective pair measuring Factor III -- successful-unsuccessful -- was removed from the list. Thus, the new questionnaire booklet consisted of 18 scales. It was used with a list of 30 occupational titles.

Table 13 also served as a key in scoring Phase 2. In all cases, the rating of the word on the right-hand side of each pair, as it appeared in this table, was given a higher score than that of the left-hand side. Scores ranged from one to seven, the same as that obtained in Phase 1. The score for each occupation on a characteristic factor was the average of all scale scores within that factor. These "characteristic-factor scores" formed the basic data matrix for the analysis to group occupations in Phase 2.

A sample booklet of the questionnaire used in Phase 2 is given in Appendix C. Details of the analysis are presented in chapter 5.

CHAPTER 5

PHASE 2 - GROUPS OF OCCUPATIONS

In this chapter, results from the second phase of this study are presented. The data were collected from one group of students and recorded separately by sex. The analysis was carried out on each group to see if there were sex differences as well as to choose the appropriate analysis for the next step. The goals were to group occupations and to construct profiles in terms of occupational characteristic factors.

There are three parts to this chapter. First, there is a cross validation study of the scales, followed by an analysis of occupational groups, and finally a construction of profiles and profile analysis.

A Cross Validation of Scales

The intercorrelations among six characteristic-factor scores and among 18 scales were obtained in this phase of study. The intercorrelations among characteristic-factor scores are shown in Table 14. The intercorrelations among 18 scales are given in Table 49, Appendix B.

(NOTE: The term "characteristic-factor scores", as used in this study, is not to be confused with the term "factor scores" normally used to mean those scores formed by $F = A'R^{-1}Z$.)

From Table 14, it can be seen that the intercorrelations among characteristic-factor scores are quite high, ranging from -.416 to .514. Though the original factor structure of these scales was orthogonal, these correlations were not unexpected. The high correlations among characteristic-factor scores appeared because of the way these scales

Table 14

Intercorrelations among Six Characteristic-Factor Scores

Characteristic Factor	I	II	III	IV	V	VI
I Personal Satisfaction	1.000					
II Values to Society	0.514	1.000				
III Life Security	0.491	0.508	1.000			
IV Prestige or General Impression	0.363	0.282	0.284	1.000		
V Physical Security	-0.156	-0.183	-0.169	0.208	1.000	
VI Power	0.466	0.468	0.408	0.163	-0.416	1.000
Mean	4.345	5.162	4.789	4.712	4.405	4.433
Standard Deviation	1.769	1.553	1.423	1.367	1.736	1.655

were scored. Though these scales had high loadings on each factor, they also had some loading values on other factors, as can be seen in Table 12. These scales should not be viewed as being pure measures of the characteristic factors. However, when scoring the answers in this phase of study, all scales were given a unit weight. As a result, variances of scales measuring different characteristic factors overlapped to some degree. These overlapping variances contributed to the high correlations among characteristic-factor scores.

However, if these scales were still measuring the same factor structure, the intercorrelations among scales within the same characteristic factor would be higher than those among scales measuring different characteristic factors. An inspection of the intercorrelations among 18 scales, as given in Table 49, Appendix B, seemed to confirm this speculation. The better way to see if the same factor structure existed among these scales is to re-analyze the scales. Thus, the intercorrelations among these 18 scales were used with a principal-components analysis. Five components corresponded to eigenvalues greater than one. However, six components were retained for the varimax rotation. The total variance accounted for by the six components was 78.46%. Results of the analysis are shown in Table 15.

The component structure of all 18 scales, as shown in Table 15, is very well defined. Substantial loading on each scale is higher than .600. No other loading on the same scale is above .300. Regarding the highest loading of each scale, the 18 scales are grouped under the six components in exactly the same way as they were grouped under the six factors as shown in Table 12. Judging from these results, the grouping

Table 15

Varimax Rotated Components of Eighteen Scales - Total Group

Scale	I	II	III	IV	V	VI	$\underline{h}_j^2$
boring - enjoyable	.855*	.186	.131	-.096	.158	.124	.833
uninteresting - interesting	.857*	.218	.146	-.125	.162	.113	.858
dull - exciting	.855*	.205	.145	-.142	.174	.105	.856
unpleasant - pleasant	.836*	.188	.135	.020	.094	.191	.798
uncreative - creative	.673*	.193	.255	.109	.049	-.001	.569
unimportant - important	.236	.816*	.164	-.094	.127	.062	.777
unnecessary - necessary	.175	.879*	.115	-.060	.121	.063	.838
worthless - valuable	.209	.832*	.207	-.033	.143	.093	.809
meaningless - meaningful	.248	.752*	.211	-.044	.137	.115	.706
poor - rich	.226	.209	.828*	.011	.136	.198	.838
poorly paid - well paid	.202	.177	.849*	.012	.118	.193	.844
simple - complex	.203	.251	.633*	-.203	.073	-.121	.567
cruel - kind	.076	.088	.091	.136	-.032	.878*	.812
awful - nice	.290	.146	.120	.102	.116	.778*	.750
dangerous - safe	-.085	-.070	-.066	.848*	-.171	.064	.769
rough - smooth	-.022	-.074	-.036	.844*	-.143	.157	.765
powerless - powerful	.216	.200	.170	-.182	.853*	.036	.878
weak - strong	.243	.253	.127	-.242	.810*	.045	.856
Total Variance	21.541%	17.639%	11.948%	9.255%	9.161%	8.918%	78.461%
Common Variance	27.454%	22.481%	15.227%	11.796%	11.675%	11.366	

* Loadings which correspond to the substantial loadings of the same scales in phase one analysis as appeared in Tables 12 and 13.

of these scales is identical to that obtained from the phase-one analysis, as shown in Tables 12 and 13.

Since the same results appeared in two different groups of subjects, this could be regarded as a confirmation of the same factor structure being measured. Thus, these scales are valid measures of the occupational characteristic factors previously identified.

A Principal Components Analysis of Occupations

The intercorrelations among the 30 occupations were computed separately for males and females. The two 30 X 30 correlation matrices which are given in Tables 50 and 51, Appendix B, were used in the analysis as follows:

1. A principal components analysis of the two matrices was carried out. Components corresponding to eigenvalues greater than one were retained. As a result, five components were extracted for males, and seven for females. These components were rotated to the varimax criterion. The resulting matrices are shown in Tables 16 and 17.

At this point, an attempt was made to verify sex differences, and to decide upon the number of components to be retained for interpretation. However, since the numbers of components were different, the results were not comparable. Moreover, the component structures obtained at this step were not simple for interpretation. The groups of occupations under some components were too small to make a meaningful interpretation. It seemed likely that a smaller number of components was needed for this number of occupations. Thus, it was decided that more trial analyses were needed to be carried out with smaller and different numbers of components.

Table 16

Five Varimax Rotated Components of Occupations - Male Group

No.	Occupation	I	II	III	IV	V	$\underline{h}_j^2$
1	Airplane Pilot	-.300	.680	.290	.069	.041	.642
2	Cattle Inspector	.374	.117	.385	-.205	.156	.368
3	Cook	.544	.051	.255	.421	-.078	.547
4	Telephone Operator	.750	-.009	.177	.023	.151	.617
5	Salesman	.493	-.060	.179	.312	.060	.380
6	Lawyer	-.007	.712	.012	.073	.085	.520
7	Reporter	.136	.276	.467	.495	.050	.560
8	Cartoonist	.274	-.188	-.057	.678	-.001	.574
9	Optometrist	.643	.476	.001	-.018	.109	.653
10	Fisherman	.002	.093	.594	.088	.253	.433
11	Secretary	.761	.049	.085	.267	.071	.665
12	Bus Driver	.333	.120	.489	-.061	.259	.436
13	S.S. Attendant*	.418	-.043	.662	.081	-.026	.621
14	Tailor	.783	.044	.041	.155	-.082	.648
15	Electronics Worker	-.123	.679	.375	.035	-.227	.670
16	Mechanic	-.055	.515	.565	.140	-.198	.646
17	Policeman	-.296	.510	.449	-.191	.348	.708
18	Soldier	-.328	.428	.504	-.148	.257	.633
19	Athletic Coach	-.002	.013	.277	.303	.731	.704
20	Sports Announcer	.337	.040	.049	.626	.153	.533
21	Chemist	.050	.701	.116	.079	.015	.514
22	Mailman	.539	.014	.547	-.021	.021	.590
23	Librarian	.709	-.297	-.007	.087	.111	.610
24	Doctor	.111	.778	-.011	-.109	.132	.646
25	Astronomer	.376	.266	-.011	.226	.034	.264
26	Dressmaker	.809	-.100	-.041	.172	-.063	.700
27	Actor	-.029	.479	-.126	.596	.096	.611
28	Nurse	.493	.482	.156	.010	.224	.550
29	Teacher	.324	.338	.121	-.013	.590	.582
30	Dentist	.424	.640	-.006	-.008	.205	.632
	Total Variance	19.250%	15.932%	9.952%	7.236%	5.149%	57.520%
	Common Variance	33.467%	27.699%	17.302%	12.580%	8.951%	

* Service Station Attendant.

Table 17

Seven Varimax Rotated Components of Occupations - Female Group

Occ. No.*	I	II	III	IV	V	VI	VII	h_j^2
1	.706	-.199	-.015	.359	-.028	.069	-.014	.673
2	.185	-.010	.165	.132	.751	-.003	-.062	.647
3	.041	.115	.728	.093	.020	.093	.144	.584
4	.029	.335	.672	.111	.083	-.103	.150	.617
5	-.136	.507	.360	.063	.350	.281	-.047	.612
6	.788	.083	-.044	.059	-.162	.224	-.069	.714
7	.382	-.107	.474	.134	-.046	.416	.232	.628
8	-.035	.098	.192	-.050	-.089	.021	.856	.792
9	.329	.737	.139	.132	-.017	.011	.042	.690
10	.387	.033	.248	.343	.377	.186	.133	.525
11	-.058	.592	.515	.197	-.135	.173	.061	.709
12	.215	.354	.370	.123	.568	.241	.010	.704
13	.040	.385	.429	.197	.235	.056	-.147	.453
14	-.092	.682	.320	-.081	.057	-.020	.167	.614
15	.835	.162	-.096	-.008	.110	.025	.141	.766
16	.842	.175	.138	-.145	-.007	.076	-.049	.788
17	.733	-.200	.119	.215	.052	.158	-.270	.738
18	.662	-.322	.048	.099	.246	.109	-.179	.659
19	.273	.143	-.009	.064	.037	.847	-.046	.821
20	-.079	.377	.346	.110	.172	.444	.351	.629
21	.741	.071	-.021	.277	.175	-.047	.162	.691
22	-.095	.244	.653	-.197	.298	-.001	-.026	.623
23	-.420	.380	.379	.085	.403	.200	.133	.692
24	.781	-.002	.017	.365	-.008	-.090	-.019	.753
25	.254	.076	-.202	.690	.310	.178	.132	.732
26	-.285	.659	.182	.042	-.015	.301	.107	.653
27	.261	.103	.205	.397	-.556	.196	.131	.643
28	.296	.323	.306	.539	.052	-.124	-.130	.611
29	.229	.165	.367	.628	-.098	.087	-.250	.689
30	.402	.541	-.089	.244	.083	-.148	-.271	.624
T.V.	19.874%	11.768%	10.863%	7.197%	6.951%	5.554%	4.703%	66.910%
C.V.	29.702%	17.587%	16.236%	10.757%	10.389%	8.300%	7.029%	

* Occupational numbers are the same as those in Table 16.

2. The varimax rotation method was re-applied to the unrotated component matrices obtained from the first step. At this time, it was used with a different number of retained components at a time. In the male group, the numbers of retained components for the rotation were three and then four respectively. In the female group, three, four, and then five were used for the rotation at a time. Results of these rotated component structures are shown in Tables 18 and 19 for males, and Tables 20 to 22 for females.

The problem of sex differences and the number of retained components were examined. When the structures of the same number of components were compared between the two sexes, there were some similarities and some differences. This evidence was apparent for all corresponding component structures, i.e., three, four, and five component structures. Thus, the component structures of the two sexes could not be judged as being identical. Therefore, at this point at least, the analysis would be better based on sex grouping.

Regarding the number of retained components, comparisons among groups of occupations that resulted from various structures were made. Three components seemed too small. The first component had too many occupations, and their properties were confounded. It was difficult to verify anything common among the occupations and made interpretation difficult. The five-component structure, on the other hand, gave small groups of occupations among lower order components. It made interpretation of these components less reliable. The four-component structure, as shown in Tables 19 and 21, gave a better grouping of occupations. Thus, these results were retained for further study.

Table 18

Three Varimax Rotated Components of Occupations - Male Group

No.	Occupation	I	II	III	$\underline{h}_j^2$
1	Airplane Pilot	-.319	.685	.226	.622
2	Cattle Inspector	.213	.078	.504	.306
3	Cook	.622	.105	.248	.460
4	Telephone Operator	.675	-.010	.344	.575
5	Salesman	.551	-.011	.227	.355
6	Lawyer	-.017	.718	.038	.518
7	Reporter	.240	.353	.401	.343
8	Cartoonist	.524	-.070	-.106	.291
9	Optometrist	.559	.460	.164	.551
10	Fisherman	-.041	.119	.615	.394
11	Secretary	.786	.085	.201	.665
12	Bus Driver	.218	.114	.604	.425
13	S.S. Attendant *	.333	-.046	.664	.554
14	Tailor	.768	.049	.133	.610
15	Electronics Worker	-.184	.654	.257	.527
16	Mechanic	-.096	.509	.435	.458
17	Policeman	-.422	.493	.506	.677
18	Soldier	-.438	.414	.514	.627
19	Athletic Coach	.085	.118	.440	.215
20	Sports Announcer	.538	.154	.063	.317
21	Chemist	.025	.701	.121	.506
22	Mailman	.417	-.005	.611	.548
23	Librarian	.699	-.281	.140	.588
24	Doctor	.023	.752	.082	.572
25	Astronomer	.417	.297	.040	.264
26	Dressmaker	.816	-.087	.064	.678
27	Actor	.190	.584	-.171	.407
28	Nurse	.414	.480	.311	.499
29	Teacher	.265	.366	.364	.336
20	Dentist	.355	.634	.149	.550
	Total Variance	19.745%	16.196%	12.172%	48.114%
	Common Variance	41.039%	33.663%	25.298%	

* Service Station Attendant.

Table 19

Four Varimax Rotated Components of Occupations - Male Group

No.	Occupation	I	II	III	IV	$\underline{h}_j^2$
1	Airplane Pilot	-.287	.684	.288	.055	.636
2	Cattle Inspector	.400	.125	.388	-.205	.368
3	Cook	.527	.033	.211	.437	.514
4	Telephone Operator	.761	-.007	.184	.040	.615
5	Salesman	.489	-.063	.181	.322	.379
6	Lawyer	.002	.716	.024	.077	.520
7	Reporter	.134	.273	.466	.487	.547
8	Cartoonist	.248	-.196	-.035	.687	.573
9	Optometrist	.653	.475	-.004	.007	.652
10	Fisherman	.031	.112	.643	.064	.431
11	Secretary	.757	.042	.079	.290	.665
12	Bus Driver	.365	.136	.525	-.069	.432
13	S.S. Attendant *	.425	-.053	.609	.078	.560
14	Tailor	.770	.025	-.014	.186	.628
15	Electronics Worker	-.130	.658	.280	.035	.529
16	Mechanic	-.060	.494	.474	.134	.490
17	Policeman	-.249	.542	.526	-.221	.680
18	Soldier	-.288	.452	.555	-.178	.628
19	Athletic Coach	.051	.072	.495	.271	.326
20	Sports Announcer	.327	.044	.102	.631	.518
21	Chemist	.056	.698	.100	.084	.508
22	Mailman	.550	.007	.503	-.017	.556
23	Librarian	.710	-.296	.007	.106	.603
24	Doctor	.130	.785	.003	-.102	.643
25	Astronomer	.371	.262	-.014	.241	.264
26	Dressmaker	.794	-.117	-.083	.204	.692
27	Actor	-.041	.482	-.078	.599	.599
28	Nurse	.515	.492	.185	.022	.542
29	Teacher	.374	.382	.270	-.021	.359
30	Dentist	.442	.650	.023	.007	.618
	Total Variance	19.320%	16.248%	10.518%	7.498%	53.585%
	Common Variance	36.056%	30.322%	19.628%	13.993%	

* Service Station Attendant.

Table 20

Three Varimax Rotated Components of Occupations - Female Group

No.	Occupation	I	II	III	h_j^2
1	Airplane Pilot	.776	–.202	–.005	.643
2	Cattle Inspector	.252	.248	–.708	.625
3	Cook	.137	.584	.053	.363
4	Telephone Operator	.112	.671	.039	.464
5	Salesman	–.002	.726	–.202	.568
6	Lawyer	.774	–.098	.179	.641
7	Reporter	.474	.297	.118	.327
8	Cartoonist	–.074	.303	.369	.233
9	Optometrist	.390	.540	.213	.489
10	Fisherman	.527	.310	–.277	.451
11	Secretary	.100	.766	.291	.681
12	Bus Driver	.332	.631	–.416	.682
13	S.S. Attendant *	.178	.586	–.167	.403
14	Tailor	–.070	.687	.156	.501
15	Electronics Worker	.761	–.044	.001	.582
16	Mechanic	.751	.043	.053	.569
17	Policeman	.787	–.147	–.154	.664
18	Soldier	.664	–.228	–.338	.607
19	Athletic Coach	.400	.240	.047	.219
20	Sports Announcer	.058	.687	.065	.479
21	Chemist	.770	.003	–.079	.600
22	Mailman	–.089	.619	–.233	.446
23	Librarian	–.278	.730	–.236	.666
24	Doctor	.837	–.095	.014	.710
25	Astronomer	.495	.116	–.201	.298
26	Dressmaker	–.169	.682	.217	.541
27	Actor	.408	.145	.594	.540
28	Nurse	.493	.396	–.011	.400
29	Teacher	.493	.348	.063	.368
30	Dentist	.468	.212	–.028	.265
	Total Variance	23.348%	20.504%	6.230%	50.082%
	Common Variance	46.620%	40.940%	12.440%	

* Service Station Attendant.

Table 21

Four Varimax Rotated Components of Occupations - Female Group

No.	Occupation	I	II	III	IV	h^2_j
1	Airplane Pilot	.786	-.167	-.015	.061	.650
2	Cattle Inspector	.245	.151	.736	-.051	.628
3	Cook	.085	.489	.110	.415	.430
4	Telephone Operator	.062	.637	.092	.215	.464
5	Salesman	-.049	.677	.318	.093	.570
6	Lawyer	.775	-.032	-.184	.083	.642
7	Reporter	.432	.169	.048	.615	.595
8	Cartoonist	-.119	.179	-.198	.621	.471
9	Optometrist	.357	.664	-.177	-.112	.612
10	Fisherman	.503	.236	.363	.216	.487
11	Secretary	.042	.796	-.161	.177	.692
12	Bus Driver	.292	.548	.530	.139	.686
13	S.S. Attendant *	.144	.594	.236	-.030	.430
14	Tailor	-.117	.717	-.060	.048	.533
15	Electronics Worker	.761	-.000	-.005	.046	.582
16	Mechanic	.744	.086	-.038	.085	.569
17	Policeman	.796	.128	.135	.022	.668
18	Soldier	.679	-.266	.319	.049	.635
19	Athletic Coach	.370	.160	.066	.395	.323
20	Sports Announcer	-.003	.571	.125	.476	.568
21	Chemist	.769	.040	.078	.024	.600
22	Mailman	-.132	.521	.360	.196	.457
23	Librarian	-.327	.624	.376	.183	.671
24	Doctor	.844	-.007	-.050	-.070	.720
25	Astronomer	.490	.133	.203	-.048	.302
26	Dressmaker	-.218	.695	-.107	.113	.555
27	Actor	.383	.214	-.532	.261	.543
28	Nurse	.473	.500	.017	-.175	.505
29	Teacher	.472	.430	-.040	-.066	.414
30	Dentist	.470	.398	-.052	-.465	.599
Total Variance		22.961%	19.196%	6.765%	6.414%	55.336%
Common Variance		41.494%	34.690%	12.225%	11.591%	

* Service Station Attendant.

Table 22

Five Varimax Rotated Components of Occupations - Female Group

No.	Occupation	I	II	III	IV	V	h_j^2
1	Airplane Pilot	.669	-.259	.371	.035	.124	.668
2	Cattle Inspector	.185	.123	.093	.755	-.033	.629
3	Cook	-.013	.434	.265	.115	.445	.470
4	Telephone Operator	.001	.595	.237	.101	.229	.473
5	Salesman	-.053	.675	.079	.323	.079	.575
6	Lawyer	.800	-.042	.118	-.131	.086	.679
7	Reporter	.348	.125	.224	.069	.649	.613
8	Cartoonist	-.007	.266	-.265	-.213	.568	.509
9	Optometrist	.428	.673	.105	-.138	-.144	.686
10	Fisherman	.396	.169	.294	.396	.259	.496
11	Secretary	-.004	.751	.283	-.148	.185	.701
12	Bus Driver	.269	.535	.120	.555	.137	.700
13	S.S. Attendant *	.061	.531	.297	.255	-.006	.439
14	Tailor	-.013	.770	-.090	-.057	-.009	.604
15	Electronics Worker	.862	.040	-.066	.049	.014	.752
16	Mechanic	.833	.118	-.024	.015	.057	.711
17	Policeman	.676	-.219	.367	.186	.084	.681
18	Soldier	.600	-.319	.192	.360	.093	.636
19	Athletic Coach	.376	.167	.039	.087	.392	.332
20	Sports Announcer	.011	.589	.016	.125	.457	.572
21	Chemist	.749	.006	.192	.131	.041	.617
22	Mailman	-.128	.535	-.009	.355	.179	.460
23	Librarian	-.351	.624	.033	.359	.173	.673
24	Doctor	.754	-.094	.379	.009	-.019	.722
25	Astronomer	.333	.022	.437	.238	.021	.360
26	Dressmaker	-.157	.726	-.021	-.113	.074	.570
27	Actor	.259	.114	.448	-.507	.320	.640
28	Nurse	.297	.360	.598	.060	-.102	.589
29	Teacher	.212	.241	.760	-.002	.044	.683
30	Dentist	.471	.356	.242	-.004	-.462	.621
	Total Variance	19.605%	18.179%	8.158%	7.109%	6.480%	59.531%
	Common Variance	32.933%	30.536%	13.704%	11.941%	10.886%	

* Service Station Attendant.

From Tables 19 and 21, it appears that some occupations have low communalities. This may be an indication that the number of components extracted in this study is not exhaustive. The remaining components, if any, could have been found if the number of occupations in the analysis had been greater. However, for the number of occupations used here, four components were considered sufficient.

Table 23 shows occupations listed under each component for males, and Table 24 shows occupations listed under each component for females. Those occupations with loadings above .350 were listed. Many occupations appeared to be listed twice. This was not unexpected. It may arise as a result of the unexhaustive number of components extracted in this study, or may be the nature of the occupation itself.

One point should be noted regarding the listing of occupations within each component. In the female group, two occupations had high negative loadings. They were the Actor (Occupation No. 27) in Component III and the Dentist (Occupation No. 30) in Component IV, as shown in Table 21. In this analysis, occupations were grouped according to their similar characteristic patterns. A negative loading indicated the fact that the characteristics of that occupation were in the pattern opposite to those of the other occupations (i.e., occupations with positive loadings) grouped in that component. Thus, an occupation with a high negative loading was not a member of that occupational group (though they were members of the same component). Accordingly, when the occupations were listed by components in Table 24, the occupations with high negative loadings were not included in the group within that component.

Table 23

Occupations Grouped under Components - Male Group

Component	Occ. No.	Occupation	Loading
I	26	Dressmaker	.794
	14	Tailor	.770
	4	Telephone Operator	.761
	11	Secretary	.757
	23	Librarian	.710
	9	Optometrist*	.653
	22	Mailman*	.550
	3	Cook*	.527
	28	Nurse*	.515
	5	Salesman	.489
	30	Dentist*	.442
	13	Service Station Attendant*	.425
	2	Cattle Inspector*	.400
	29	Teacher*	.374
	25	Astronomer	.371
	12	Bus Driver*	.365
II	24	Doctor	.785
	6	Lawyer	.716
	21	Chemist	.698
	1	Airplane Pilot	.684
	15	Electronics Worker	.658
	30	Dentist*	.650
	17	Policeman*	.542
	16	Mechanic*	.494
	28	Nurse*	.492
	27	Actor*	.482
	9	Optometrist*	.475
	18	Soldier*	.452
	29	Teacher*	.382
III	10	Fisherman	.643
	13	Service Station Attendant*	.609
	18	Soldier*	.555
	17	Policeman*	.526
	12	Bus Driver*	.525
	22	Mailman*	.503
	19	Athletic Coach	.495
	16	Mechanic*	.474
	7	Reporter*	.466
	2	Cattle Inspector*	.388

Table 23 (Continued)

Component	Occ. No.	Occupation	Loading
IV	8	Cartoonist	.687
	20	Sports Announcer	.631
	27	Actor	.599
	7	Reporter*	.487
	3	Cook*	.437

* Occupations that also appear in another component.

As stated earlier, there were both similarities and differences between component structures based on sex groups. To further clarify this point, Table 25 was prepared. In this table, the two structures are shown together. Loadings of occupations above .350 are included. The purpose of this comparison was to see if components in these two structures had anything in common.

From the listed loadings, it can be seen that each component in one structure has its corresponding counterpart in the other. They could be paired together. Each pair has most of the listed occupations in common. In Table 25, the loading of the occupation common between corresponding components has been marked by an asterisk (*). Components I and II in the male group correspond to components II and I in the female group respectively. Components III and IV in the male group correspond to the same components in the female group. In all, the numbers of overlapping occupations are: 14 in the first pair, 13 in the second pair, and four in both the third and the fourth pairs. The numbers of occupations unique to each corresponding component are:

Table 24

Occupations Grouped under Components - Female Group

Component	Occ. No.	Occupation	Loading
I	24	Doctor	.844
	17	Policeman	.796
	1	Airplane Pilot	.786
	6	Lawyer	.775
	21	Chemist	.769
	15	Electronics Worker	.761
	16	Mechanic	.744
	18	Soldier	.679
	10	Fisherman*	.503
	25	Astronomer	.490
	28	Nurse*	.473
	29	Teacher*	.472
	30	Dentist*	.470
	7	Reporter*	.432
	27	Actor	.383
	19	Athletic Coach*	.370
	9	Optometrist*	.357
II	11	Secretary	.796
	14	Tailor	.717
	26	Dressmaker	.695
	5	Salesman	.677
	9	Optometrist*	.664
	4	Telephone Operator	.637
	23	Librarian*	.624
	13	Service Station Attendant	.594
	20	Sports Announcer*	.571
	12	Bus Driver*	.548
	22	Mailman*	.521
	28	Nurse*	.500
	3	Cook*	.489
	29	Teacher*	.430
	30	Dentist*	.398
III	2	Cattle Inspector	.736
	12	Bus Driver*	.530
	23	Librarian*	.376
	10	Fisherman*	.363
	22	Mailman*	.360

Table 24 (Continued)

Component	Occ. No.	Occupation	Loading
IV	8	Cartoonist	.621
	7	Reporter*	.615
	20	Sports Announcer*	.476
	3	Cook*	.415
	19	Athletic Coach*	.395

* Occupations that also appear in another component.

three in the first pair, four in the second pair, seven in the third pair, and two in the fourth pair.

The fact that these components correspond between structures raised speculation that the two structures may, in fact, be the same structure. Differences may be due to different locations of the rotated axes. If the two structures were the same structure, the fact could be revealed by re-rotating one matrix to fit the other. It was decided that this speculation should be verified before going to the next step of the study. Thus, the method of Orthogonal Procrustes Solution (i.e., the Factor Matching Procedure) (Mulaik, 1972, pp. 293-299; Schoneman, 1966; Skakun et al., 1976) was carried out with the two component matrices. The component matrix for males was used as a target matrix for the component matching. The selection of this matrix was based on the fact that the number of males was larger than that of females. There was no indication as to which matrix was superior to the other regarding their structures.

Results of the Orthogonal Procrustes Solution on the component

Table 25

A Comparison of Component Structures between Male and Female Groups

Occ. No.[a]	Male				Female			
	I	II	III	IV	I	II	III	IV
1	-	.684*	-	-	.786*	-	-	-
2	.400	-	.388*	-	-	-	.736*	-
3	.527*	-	-	.437*	-	.489*	-	.415*
4	.761*	-	-	-	-	.637*	-	-
5	.489*	-	-	-	-	.677*	-	-
6	-	.716*	-	-	.775*	-	-	-
7	-	-	.466	.487*	.432	-	-	.615*
8	-	-	-	.687*	-	-	-	.621*
9	.653*	.475*	-	-	.357*	.664*	-	-
10	-	-	.643*	-	.503	-	.363*	-
11	.757*	-	-	-	-	.796*	-	-
12	.365*	-	.525*	-	-	.548*	.530*	-
13	.425*	-	.609	-	-	.594*	-	-
14	.770*	-	-	-	-	.717*	-	-
15	-	.658*	-	-	.761*	-	-	-
16	-	.494*	.474	-	.744*	-	-	-
17	-	.542*	.526	-	.796*	-	-	-
18	-	.452*	.555	-	.679*	-	-	-
19	-	-	.495	-	.370	-	-	.395
20	-	-	-	.631*	-	.571	-	.476*
21	-	.698*	-	-	.769*	-	-	-
22	.550*	-	.503*	-	-	.521*	.360*	-
23	.710*	-	-	-	-	.624*	.376	-
24	-	.785*	-	-	.844*	-	-	-
25	.371	-	-	-	.490	-	-	-
26	.794*	-	-	-	-	.695*	-	-
27	-	.482*	-	.599	.383*	-	-	-
28	.515*	.492*	-	-	.473*	.500*	-	-
29	.374*	.382*	-	-	.472*	.430*	-	-
30	.442*	.650*	-	-	.470*	.398*	-	-

[a] Occupational numbers are the same as those appearing in previous tables.

* Occupations which are common between corresponding components.

matrix for females (i.e., the transformed component matrix) are given in Table 52, Appendix B. Table 26 presents the component structure for males (i.e., the target matrix) in comparison with that for females (i.e., the transformed matrix). Only loadings above .350 are listed in the table. The loadings of the occupations which are common between corresponding components are marked with asterisks (*). Since the female matrix was transformed by the factor matching prodecure, components between the two matrices correspond in the same order. In all, the occupations overlapping between corresponding components are: 14 in the first pair (the same as that in Table 25), 13 in the second pair (also the same), seven in the third pair (increased by three), and five in the fourth pair (increased by one). The numbers of occupations unique to each corresponding component are: three in the first pair, one in the second pair, four in the third pair, and two in the fourth pair.

At this point, a consideration was given to the question of whether the two component matrices (in Table 26) could be regarded as having the same structure. The number of overlapping occupations between corresponding components (Table 25 and Table 26) remains the same in the first and the second pairs, but increases from four to seven in the third pair, and from four to five in the fourth pair. The numbers of nonoverlapping occupations are the same in the first (three occupations) and the fourth (two occupations) pairs, but decrease from four to one in the second pair and from seven to four in the third pair. In general, it appears that as a result of the matching procedure, the female matrix moved closer to the male matrix regarding the component structure. However, as the results indicate, the two component matrices still have

Table 26

A Comparison between Male Original Component Structure and Female Transformed Component Structure

Occ.[a] No.	Male				Female			
	I	II	III	IV	I	II	III	IV
1	-	.684	-	-	-	.694*	-	-
2	.400	-	.388*	-	-	-	.679*	-
3	.527*	-	-	.437*	.411*	-	-	.409*
4	.761*	-	-	-	.589*	-	-	-
5	.489*	-	-	-	.684*	-	-	-
6	-	.716*	-	-	-	.745*	-	-
7	-	-	.466*	.487*	-	-	.473*	.555*
8	-	-	-	.687*	-	-	-	.660*
9	.653*	.475*	-	-	.613*	.466*	-	-
10	-	-	.643*	-	-	-	.591*	-
11	.757*	-	-	-	.725*	-	-	.391
12	.365*	-	.525*	-	.542*	-	.617*	-
13	.425*	-	.609	-	.596*	-	-	-
14	.770*	-	-	-	.695*	-	-	-
15	-	.658*	-	-	-	.686*	-	-
16	-	.494*	.474	-	-	.679*	-	-
17	-	.542*	.526*	-	-	.666*	.432*	-
18	-	.452*	.555*	-	-	.481*	.545*	-
19	-	-	.495*	-	-	-	.370*	.354
20	-	-	-	.631*	.490	-	-	.469*
21	-	.698*	-	-	-	.675*	.379	-
22	.550*	-	.503	-	.527*	-	-	-
23	.710*	-	-	-	.649*	-	-	-
24	-	.785*	-	-	-	.802*	-	-
25	.371	-	-	-	-	.403	-	-
26	.794*	-	-	-	.667*	-	-	-
27	-	.482*	-	.599*	-	.482*	-	.527*
28	.515*	.492*	-	-	.475*	.509*	-	-
29	.374*	.382*	-	-	.381*	.496*	-	-
30	.442*	.650*	-	-	.417*	.587*	-	-

[a] Occupation numbers are the same as those appearing in previous tables.

* Occupations which are common between corresponding components.

unique occupations. It is apparent that the two component matrices, shown in Table 26, could not be regarded as having identical structures. So, further analyses were based on sex groupings.

Since the female matrix, Table 25, had a slightly simpler structure than that in Table 26 (12 variables load on two components in Table 25 as opposed to 14 variables in Table 26), and since the choice of the male structure as the target matrix was arbitrary, it was decided to use the two original component structures in Table 25 for further steps in the study.

The fact that the components in Table 25 correspond between structures indicates that the two structures are very similar. Thus, boys and girls use the same scheme to classify occupations in terms of occupational characteristics. Differences between them exist, but these differences seem to reflect the fact that boys and girls have different perceptions of some occupations. However, this does not indicate a different system of occupational classification based upon sex.

Since the difference between the two structures was relatively small, the components were labelled together. Table 27 shows the four labelled occupational groups with listed occupations. The occupations are listed separately for males and females and they are ranked differently according to their relative loadings in the group. This was done to preserve the individual contribution of the occupation to the component. In Table 27, occupations not common to both corresponding components have been marked by an asterisk (*) to indicate an existing difference between the sexes.

In the next section, profiles of individual occupations and oc-

Table 27

Occupational Groups with Corresponding Components

Occupational Group	Male	Female
1 Skilled and Semiskilled Occupations	Component I:	Component II:
	26-Dressmaker	11-Secretary
	14-Tailor	14-Tailor
	4-Telephone Operator	26-Dressmaker
	11-Secretary	5-Salesman
	23-Librarian	9-Optometrist
	9-Optometrist	4-Telephone Operator
	22-Mailman	23-Librarian
	3-Cook	13-S. S. Attendant [a]
	28-Nurse	*20-Sports Announcer
	5-Salesman	12-Bus Driver
	30-Dentist	22-Mailman
	13-S. S. Attendant [a]	28-Nurse
	* 2-Cattle Inspector	3-Cook
	29-Teacher	29-Teacher
	*25-Astronomer	30-Dentist
	12-Bus Driver	
2 Professional and Trained Occupations	Component II:	Component I:
	24-Doctor	24-Doctor
	6-Lawyer	17-Policeman
	21-Chemist	1-Airplane Pilot
	1-Airplane Pilot	6-Lawyer
	15-Electronics Worker	21-Chemist
	30-Dentist	15-Electronics Worker
	17-Policeman	16-Mechanic
	16-Mechanic	18-Soldier
	28-Nurse	*10-Fisherman
	27-Actor	*25-Astronomer
	9-Optometrist	28-Nurse
	18-Soldier	29-Teacher
	29-Teacher	30-Dentist
		* 7-Reporter
		27-Actor
		*19-Athletic Coach
		9-Optometrist

Table 27 (Continued)

Occupational Group	Male	Female
3 Outdoor-Physical Occupations	Component III: 10-Fisherman *13-S. S. Attendant[a] *18-Soldier *17-Policeman 12-Bus Driver 22-Mailman d *19- Athletic Coach *16-Mechanic * 7-Reporter 2-Cattle Inspector	Component III: 2-Cattle Inspector 12-Bus Driver *23-Librarian 10-Fisherman 22-Mailman
4 Creative-Artistic Occupations	Component IV: 8-Cartoonist 20-Sports Announcer *27-Actor 7-Reporter 3-Cook	Component IV: 8-Cartoonist 7-Reporter 20-Sports Announcer 3-Cook *19-Athletic Coach

[a] Service Station Attendant.

* Occupations which are not common between corresponding components.

cupational groups are presented and the similarities and differences within and between sex groups are further examined.

Occupational Profiles on Characteristic Factors

As described earlier, the score that a student assigned to an occupation on one characteristic factor was an average of all rating scores within that factor. This individual "characteristic-factor score" was used as the basic unit of the data matrices in previous analyses.

Since each student gave one individual characteristic-factor score on each factor, the average of this score, over all students in the same group, is the "occupational characteristic-factor score" for that occupation based on a group of subjects. There were six occupational characteristic-factor scores for each occupation. These scores were used to plot a "characteristic profile" of each occupation. The profile described the occupation in terms of occupational characteristics as perceived by the group of subjects.

When a group of occupations with similar characteristic patterns was found, a new profile was constructed. This was done by first calculating an average of all occupational characteristic-factor scores on each factor within the same occupational group. This new average was called an "occupational group mean score". There were six mean scores for each occupational group. These mean scores were used to plot the new profile. This "representative profile" described a general characteristic pattern of the group of occupations. The two profiles, the occupational characteristic profile and the group representative profile, will be centre of study and discussion in this section.

Since some occupations belonged to two groups, the characteristic-factor scores of these occupations were used to calculate mean scores in both groups.

Previously, results were presented separately for males and females. This will also be done in this section. In effect, there were four representative profiles for each group of subjects. First, the presentation and discussion will be made within each subject group. It is followed by a comparison between groups to find similarities and differences.

According to the above procedure, Tables 28 and 29 were prepared. These tables show means and standard deviations of individual characteristic-factor scores of each occupation, for males and females respectively. The means in these two tables are the occupational characteristic-factor scores defined previously. A grand mean is an average of all 30 means in the same column.

From the two tables, a mean score for each occupational group (i.e., the occupational group mean score) was calculated. Results are presented in Table 30 for males and Table 31 for females.

The means in Tables 28 and 29 (i.e., the occupational characteristic-factor scores) were used to construct each occupational characteristic profile. The group representative profiles were constructed from means in Tables 30 and 31 (i.e., the occupational group mean scores). To have a comparison between individual characteristic profiles and a group representative profile, these two profiles were plotted together for each group of occupations.

Profiles within Each Subject Group. Figures 1 to 4 show profiles of individual occupations within occupational groups for males. Figures 5 to 8 show the same type of profiles for females. The group representative profiles are also plotted along with each group. These representative profiles are presented together in Figure 9 for males and Figure 10 for females.

At this point, the purpose of the study was to compare representative profiles within each subject group. This was done to examine the characteristic pattern of each occupational group in relation to the others. In order to show that these representative profiles

Table 28

Means and Standard Deviations of Individual Characteristic-Factor Scores of Each Occupation - Male Group

No.	Occupation	I		II		III		IV		V		VI	
		M	Sd	M	Sd	M	Sd	M	Sd	M	Sd	M	Sd
1	Airplane Pilot	5.700	1.19583	5.737	.987566	5.854	.879749	5.132	1.26787	3.074	1.42554	5.493	1.05891
2	Cattle Inspector	3.126	1.47445	4.847	1.44400	4.019	1.21053	4.243	1.12946	4.324	1.37938	4.324	1.36868
3	Cook	4.332	1.55964	4.974	1.35968	4.382	1.10240	4.750	1.17417	5.316	1.33919	3.844	1.45202
4	Telephone Operator	2.985	1.44072	4.940	1.42573	4.072	1.22785	4.581	1.35478	5.456	1.26240	3.456	1.45707
5	Salesman	3.294	1.57423	3.684	1.39512	3.759	1.29265	4.640	1.45230	4.625	1.32114	3.654	1.40707
6	Lawyer	5.197	1.41483	6.012	1.06364	6.485	.625280	4.882	1.41452	4.110	1.48237	5.676	1.33606
7	Reporter	4.941	1.34254	4.868	1.44411	4.426	1.17243	4.559	1.25303	3.978	1.38302	4.140	1.49471
8	Cartoonist	5.468	1.41779	4.160	1.41538	4.691	1.21942	5.162	1.22006	5.818	1.16286	3.485	1.44500
9	Optometrist	3.782	1.46076	5.856	1.27849	5.684	1.11271	5.110	1.17838	5.044	1.37663	4.066	1.60630
10	Fisherman	4.597	1.87681	4.854	1.39584	3.719	1.22442	4.344	1.45283	3.551	1.61140	4.463	1.30417
11	Secretary	3.465	1.62025	4.632	1.43337	4.504	1.14036	4.868	1.36829	5.735	1.03068	3.301	1.51011
12	Bus Driver	3.503	1.67244	4.987	1.37102	3.803	1.27078	4.669	1.38429	4.147	1.29496	4.610	1.59237
13	Service Station Att.	3.447	1.78401	4.712	1.56980	3.410	1.42696	4.471	1.34734	4.324	1.47470	4.029	1.54797
14	Tailor	3.171	1.38533	4.374	1.34292	4.841	.909144	4.426	1.23153	5.772	1.09288	3.515	1.54817
15	Electronics Worker	4.965	1.32707	5.738	1.07294	5.771	.870946	4.875	1.08930	3.132	1.38961	5.096	1.07189
16	Mechanic	4.859	1.48207	5.540	1.14791	5.363	1.02397	4.559	1.07283	3.316	1.35827	4.978	1.26443
17	Policeman	5.215	1.27109	6.274	1.20960	4.965	1.26686	4.272	1.56345	2.096	1.14487	6.103	1.18991
18	Soldier	4.329	1.47878	5.446	1.50582	4.015	1.13361	3.228	1.42827	1.787	1.09248	5.868	1.38431
19	Athletic Coach	5.535	1.39261	5.301	1.24008	4.415	.926777	4.978	1.04472	5.103	1.26526	5.434	1.16286
20	Sports Announcer	5.103	1.57723	4.603	1.47768	4.757	1.06458	4.941	1.14253	5.382	1.37231	4.051	1.46815
21	Chemist	4.538	1.61072	5.359	1.29254	5.557	1.08022	4.404	1.08214	3.397	1.17122	4.441	1.34910
22	Mailman	2.806	1.41877	5.150	1.46895	3.625	1.17491	4.478	1.42570	4.515	1.43479	4.015	1.60416
23	Librarian	2.462	1.32898	3.559	1.60818	3.357	1.15266	4.257	1.62131	6.199	1.24304	2.824	1.63995
24	Doctor	5.106	1.14608	6.490	.952423	6.529	.750701	5.647	1.15064	4.088	1.58333	5.294	1.35375
25	Astronomer	4.453	1.68300	5.166	1.39604	5.194	1.13019	4.691	1.17895	5.213	1.35668	3.963	1.39936
26	Dressmaker	2.912	1.43952	3.918	1.62589	4.132	1.05558	4.647	1.36678	6.088	1.03946	2.485	1.43479
27	Actor	5.832	1.27077	4.857	1.19501	5.918	.853194	4.978	1.30450	4.581	1.38429	4.684	1.45498
28	Nurse	4.238	1.53862	5.978	1.16832	5.021	1.12087	5.287	1.29852	4.581	1.27852	4.147	1.44777
29	Teacher	4.574	1.44218	5.947	1.19331	4.922	1.26175	4.324	1.57126	4.890	1.37426	4.669	1.57791
30	Dentist	4.306	1.56899	6.038	.946214	6.124	.873327	4.731	1.55849	4.728	1.51083	4.750	1.38930
	Grand Mean	4.241		5.133		4.777		4.671		4.479		4.352	

Table 29

Means and Standard Deviations of Individual Characteristic-Factor Scores of Each Occupation - Female Group

No.	Occupation	I		II		III		IV		V		VI	
		M	Sd	M	Sd	M	Sd	M	Sd	M	Sd	M	Sd
1	Airplane Pilot	5.768	.920320	6.024	.941615	5.744	.844322	4.620	1.39485	2.740	1.41506	5.640	1.07257
2	Cattle Inspector	2.712	1.30486	4.344	1.49962	4.088	1.26280	4.060	1.21096	3.860	1.22898	4.380	1.61419
3	Cook	4.536	1.65091	5.468	1.62523	4.156	1.37872	5.120	1.29831	4.920	1.53415	3.920	1.29368
4	Telephone Operator	3.792	1.78391	5.208	1.44204	4.428	1.03054	5.020	1.12677	5.040	1.32605	4.140	1.42492
5	Salesman	3.816	1.58787	4.296	1.65203	3.432	1.27991	4.940	1.08922	4.720	1.64973	3.880	1.46479
6	Lawyer	5.840	.859779	6.408	.678192	6.440	.608612	4.860	1.08186	4.040	1.47594	6.080	.966238
7	Reporter	5.032	1.73499	5.600	1.55435	4.664	.992327	4.720	.970370	4.140	1.23710	4.480	1.20400
8	Cartoonist	5.888	1.46760	4.544	1.57584	4.740	1.09654	5.620	1.18558	5.500	1.31149	3.700	1.60624
9	Optometrist	4.264	1.76701	5.952	1.54509	5.716	1.16574	5.220	1.15828	4.980	1.49319	4.360	1.45959
10	Fisherman	4.440	1.67619	5.116	1.21711	3.676	.910508	4.200	1.34165	3.440	1.47187	4.600	1.59374
11	Secretary	5.104	1.71965	5.564	1.43496	4.652	1.05646	5.440	1.14299	5.660	1.22245	4.260	1.73851
12	Bus Driver	3.288	1.70372	4.568	1.87077	3.792	1.22570	4.440	1.35146	3.860	1.60325	4.380	1.53805
13	Service Station Att.	3.144	1.65556	4.060	1.92209	3.356	1.32938	4.420	.730485	3.940	1.35145	3.940	1.63902
14	Tailor	4.040	1.81196	4.840	1.64390	4.592	1.18184	4.780	1.00080	5.560	1.28312	3.620	1.17712
15	Electronics Worker	4.904	1.42450	5.860	1.30016	5.848	.886847	4.600	1.27280	2.900	1.31909	5.500	1.21655
16	Mechanic	4.424	1.26405	5.632	1.41640	5.364	1.04763	4.720	1.17542	2.800	1.17474	5.180	1.13032
17	Policeman	5.336	1.19562	6.500	.774597	5.872	.811676	4.600	1.40713	2.340	1.57937	6.320	.881826
18	Soldier	3.852	1.27534	4.944	1.66376	3.976	.753806	3.660	1.59198	1.900	.989951	5.540	1.44859
19	Athletic Coach	5.408	1.40454	5.072	1.51408	4.572	.819042	4.740	1.17576	4.260	1.41507	5.500	1.37840
20	Sports Announcer	4.848	1.68502	4.528	1.53741	4.376	1.13006	5.140	1.18761	5.540	1.50280	4.060	1.73966
21	Chemist	4.704	1.93421	5.516	1.49284	5.572	.995404	4.480	1.17030	2.640	1.03460	5.060	1.25156
22	Mailman	3.104	1.64256	5.072	1.61134	3.428	1.18643	4.700	1.19164	5.260	1.35736	3.740	1.41506
23	Librarian	3.208	1.89271	3.892	1.86439	3.188	1.18838	5.020	1.60300	6.100	1.00000	3.460	1.90746
24	Doctor	5.392	1.17913	6.648	.571407	6.524	.643299	5.700	1.28063	3.200	1.69115	5.900	1.02957
25	Astronomer	4.912	1.79963	5.052	1.61397	5.412	1.22224	4.580	1.29368	3.820	1.37026	4.800	1.37841
26	Dressmaker	4.320	1.72882	4.484	1.89392	4.084	1.00466	4.780	1.36441	5.700	1.40000	3.560	1.32152
27	Actor	6.336	.734789	5.668	1.11274	6.248	.757960	5.540	1.16551	4.760	1.34254	5.160	1.06508
28	Nurse	5.024	1.38602	6.420	.823173	5.340	1.26618	5.436	1.53568	4.620	1.50519	5.080	1.44000
29	Teacher	6.056	1.52055	6.956	1.45220	5.320	1.06396	4.840	1.25476	4.800	1.49667	5.320	1.52237
30	Dentist	3.744	1.73668	5.872	1.22361	5.876	.946698	4.240	1.59449	4.200	1.60624	5.400	1.18322
	Grand Mean	4.541		5.306		4.816		4.808		4.241		4.699	

Table 30

Occupational Group Mean Scores on Characteristic Factors - Male Group

Occupational Group	No. of Occ.	Characteristic Factor *					
		I	II	III	IV	V	VI
1 Skilled and Semiskilled	16	3.554	4.922	4.428	4.636	5.060	3.835
2 Professional and Trained	13	4.819	5.790	5.554	4.725	3.756	5.020
3. Outdoor-Physical	10	4.236	5.198	4.176	4.380	3.714	4.796
4. Creative-Artistic	5	5.135	4.692	4.835	4.878	5.015	3.981
Grand Mean	30	4.241	5.133	4.777	4.671	4.479	4.352

Table 31

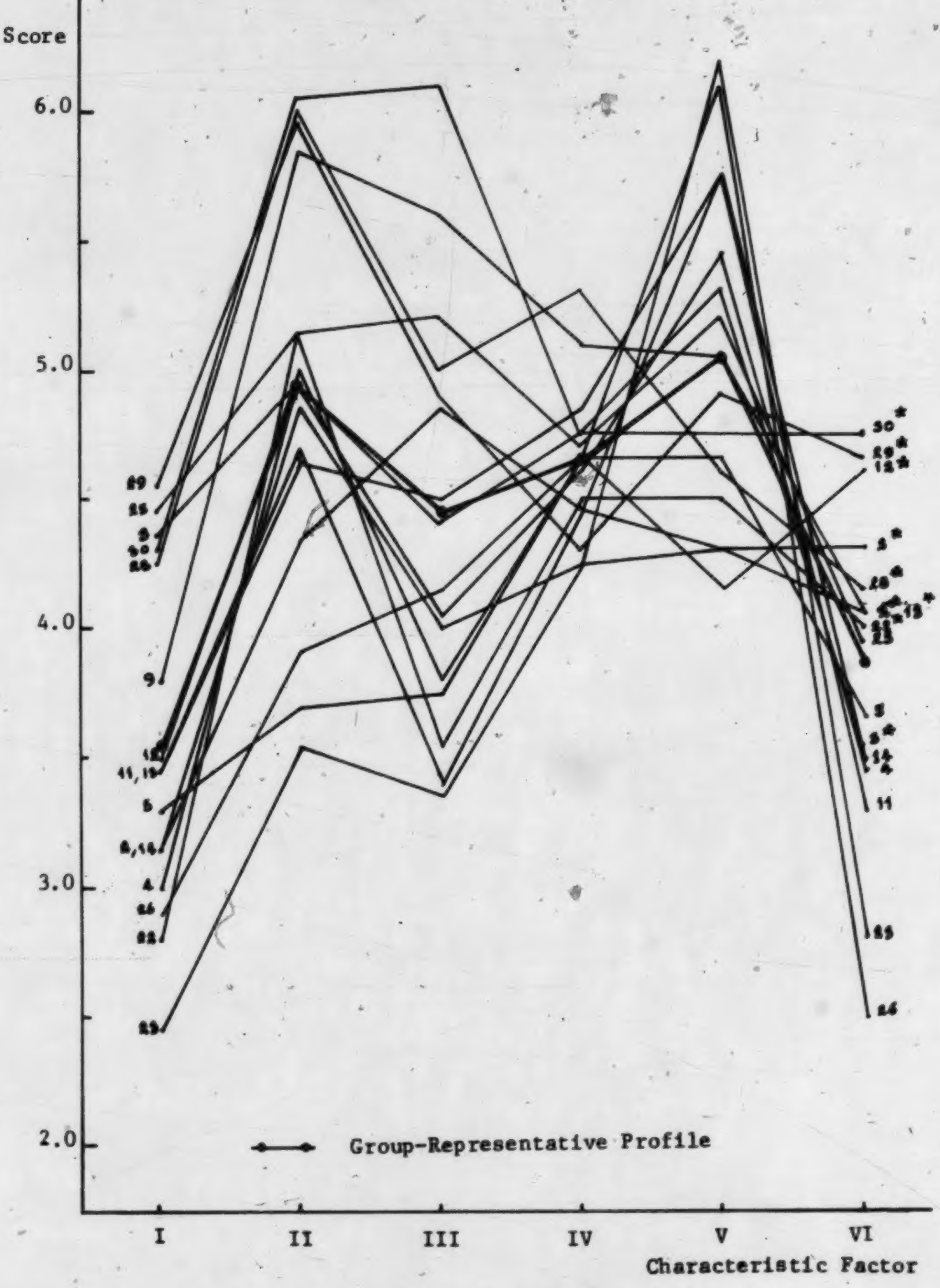
Occupational Group Mean Scores on Characteristic Factors - Female Group

Occupational Group	No. of Occ.	Characteristic Factor *					
		I	II	III	IV	V	VI
1 Skilled and Semiskilled	15	4.086	5.084	4.382	4.902	4.993	4.208
2 Professional and Trained	17	4.967	5.779	5.421	4.750	3.622	5.289
3 Outdoor-Physical	5	3.350	4.598	3.634	4.484	4.504	4.112
4 Creative-Artistic	5	5.142	5.042	4.502	5.068	4.872	4.332
Grand Mean	30	4.541	5.306	4.816	4.808	4.241	4.699

* I-Personal Satisfaction, II-Values to Society, III-Life Security, IV-Prestige or General Impression, V-Physical Security, and VI-Power.

Figure 1

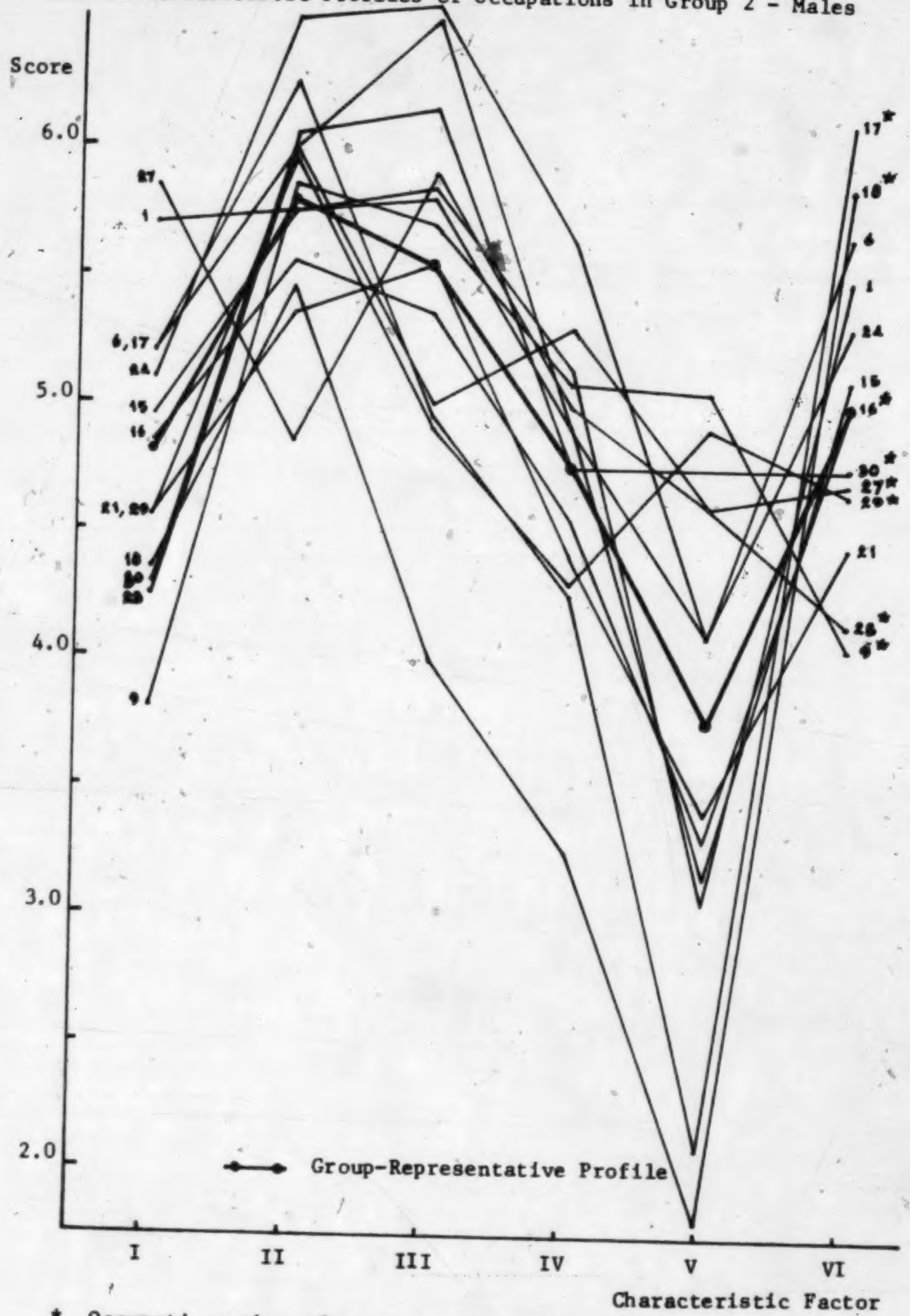
Characteristic Profiles of Occupations in Group 1 - Males



* Occupations that also appear in another group.

Figure 2

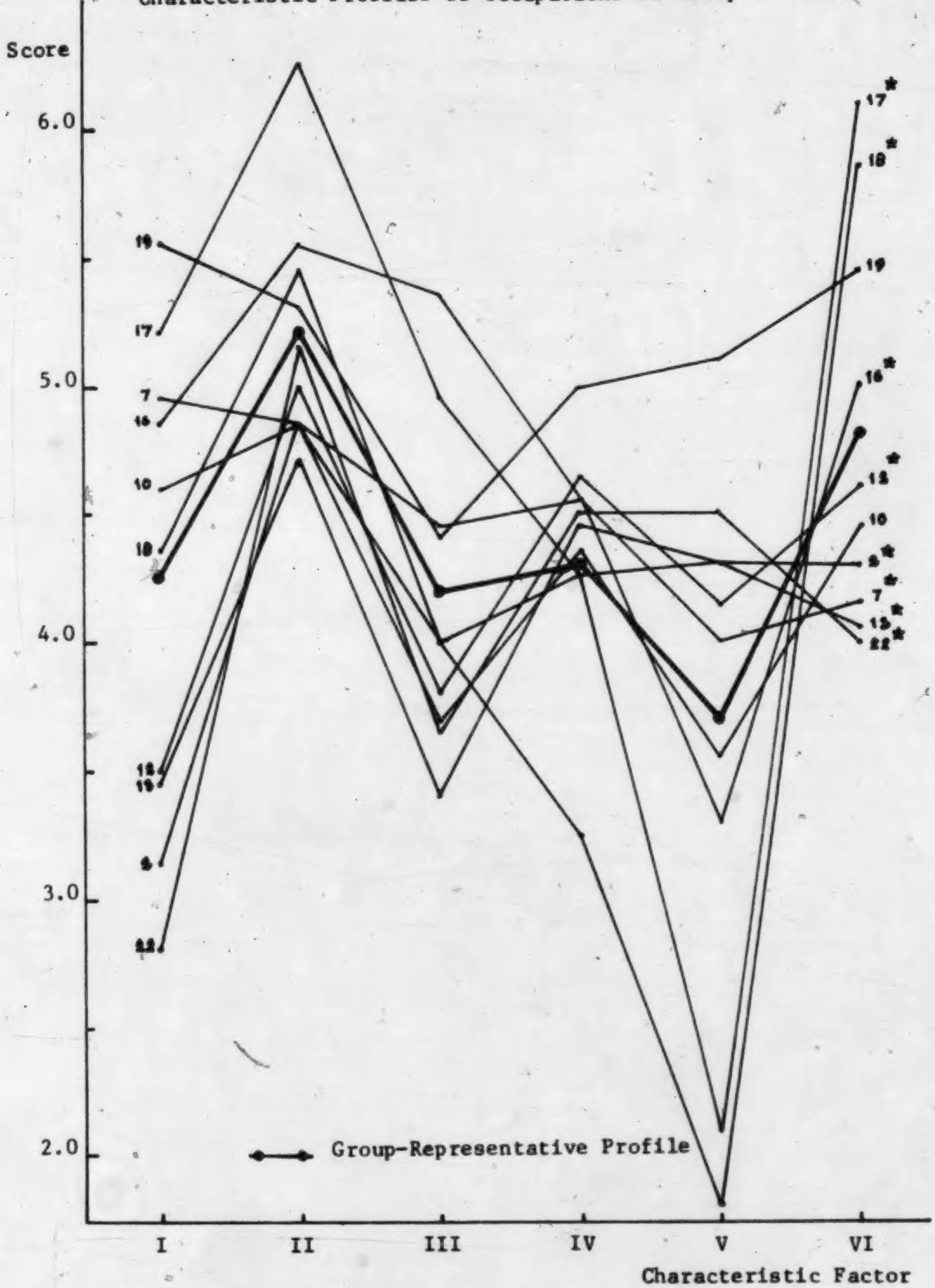
Characteristic Profiles of Occupations in Group 2 - Males



* Occupations that also appear in another group.

Figure 3

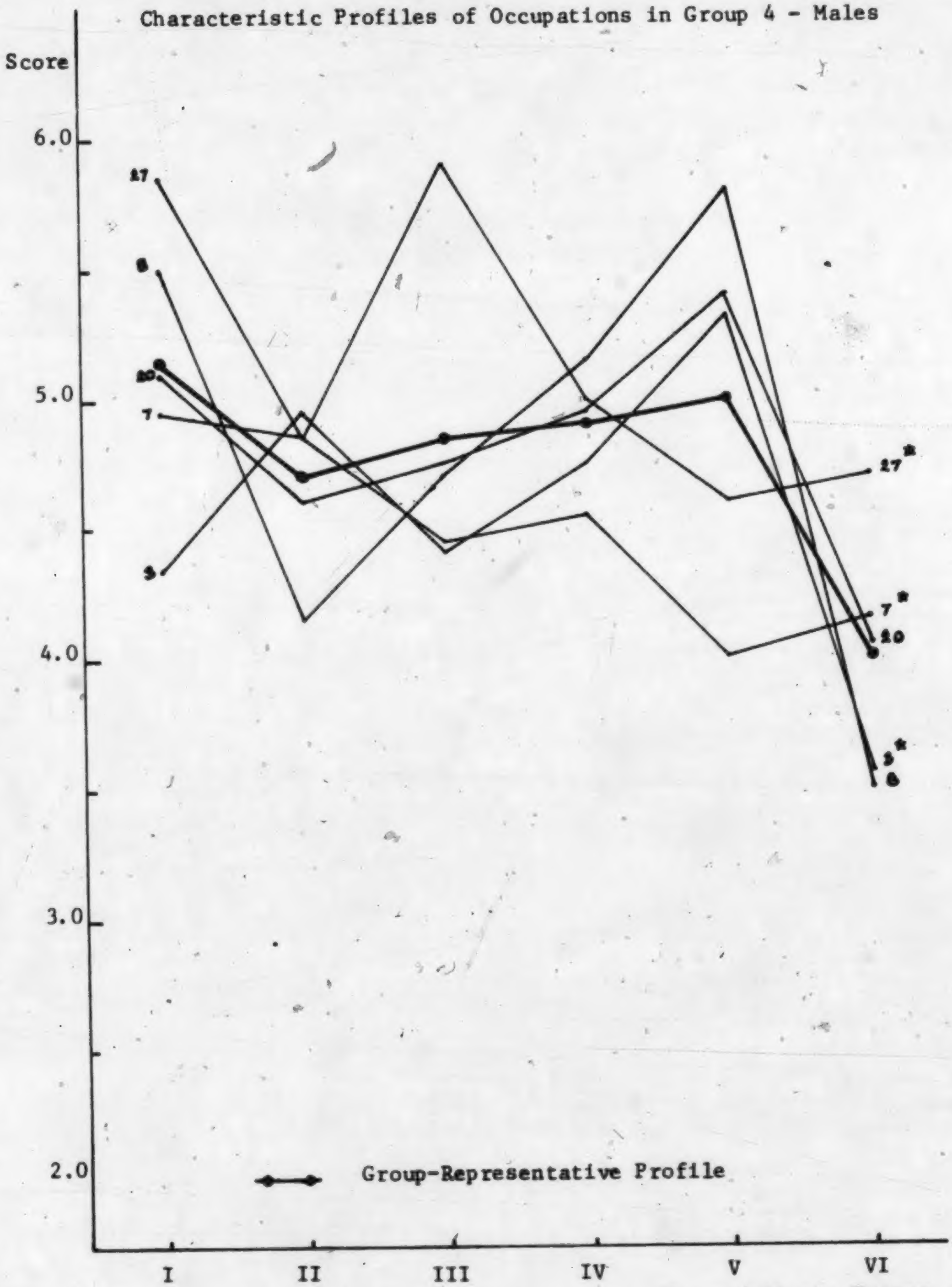
Characteristic Profiles of Occupations in Group 3 - Males



* Occupations that also appear in another group.

Figure 4

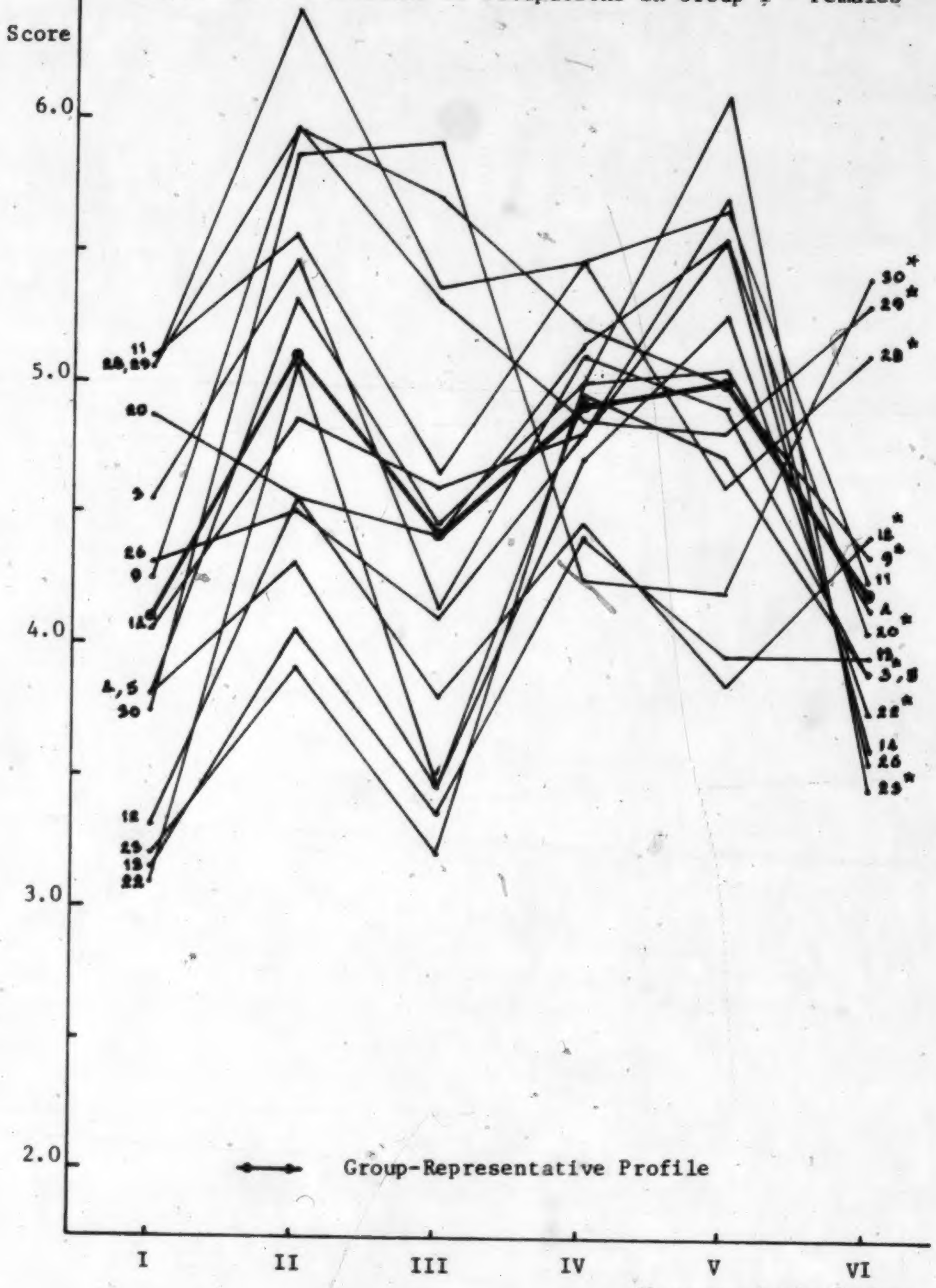
Characteristic Profiles of Occupations in Group 4 - Males



* Occupations that also appear in another group.

Figure 5

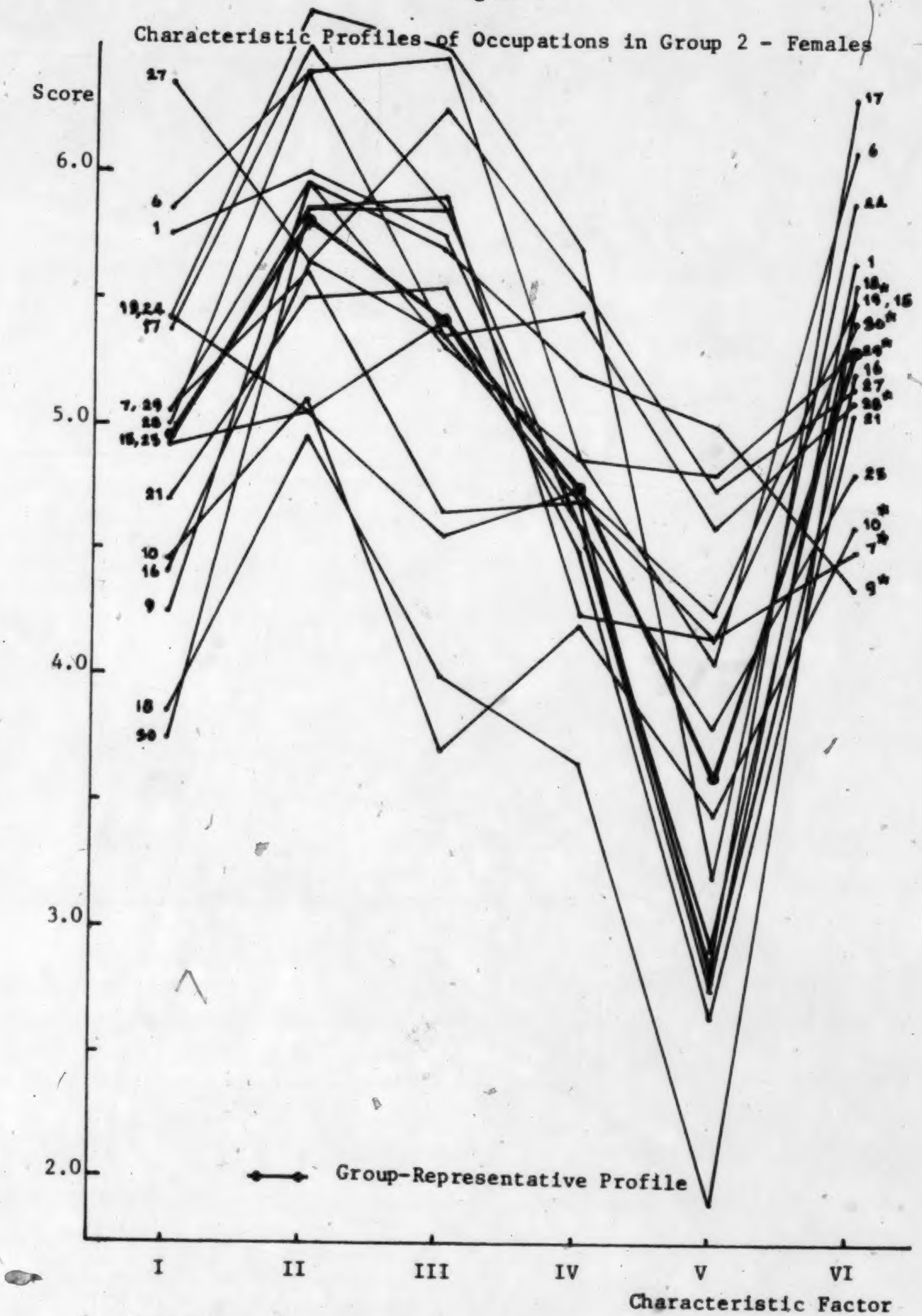
Characteristic Profiles of Occupations in Group 1 - Females



* Occupations that also appear in another group.

Figure 6

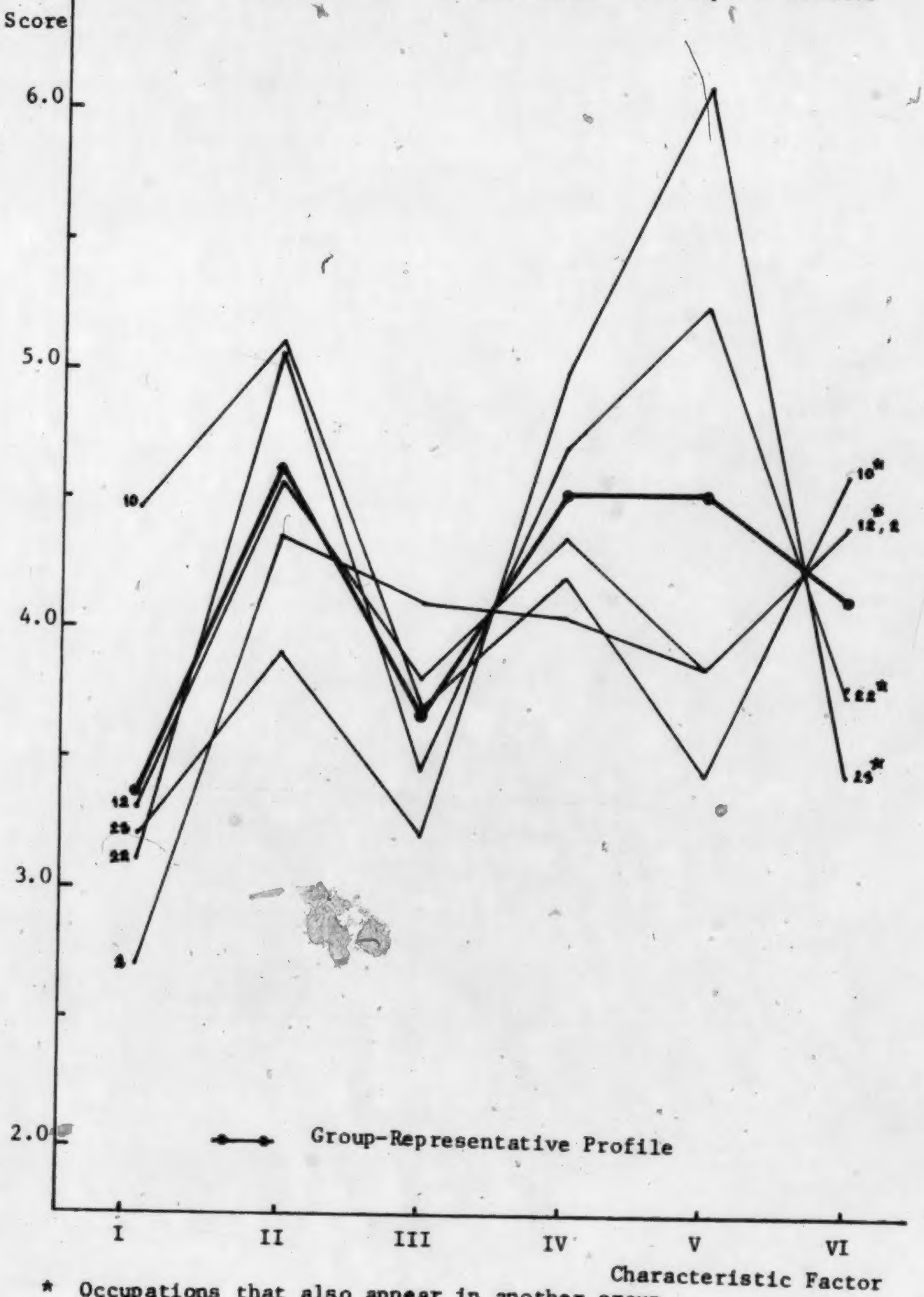
Characteristic Profiles of Occupations in Group 2 - Females



* Occupations that also appear in another group.

Figure 7

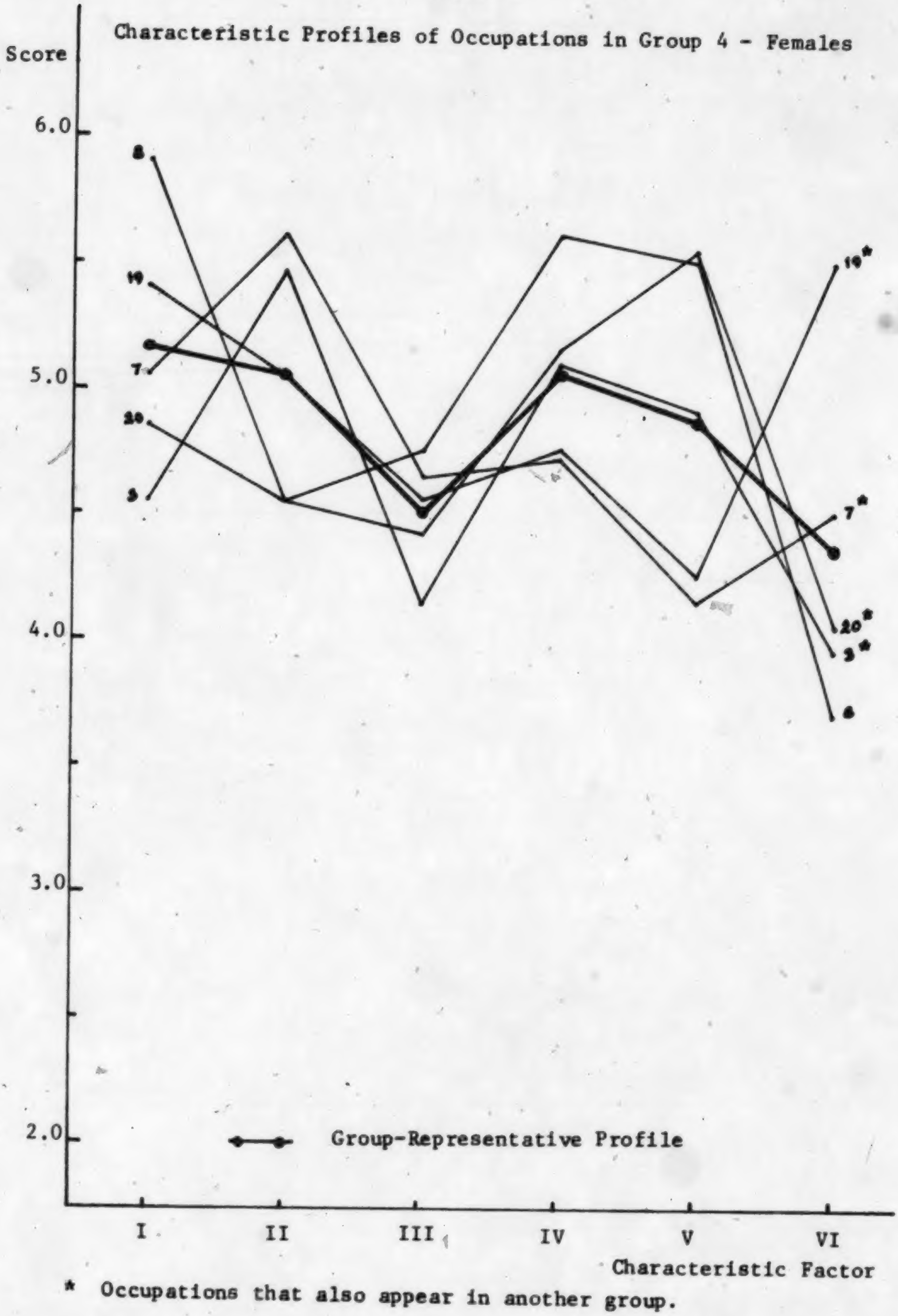
Characteristic Profiles of Occupations in Group 3 - Females



* Occupations that also appear in another group.

Figure 8

Characteristic Profiles of Occupations in Group 4 - Females



* Occupations that also appear in another group.

Figure 9

Representative Profiles of Occupational Groups - Males

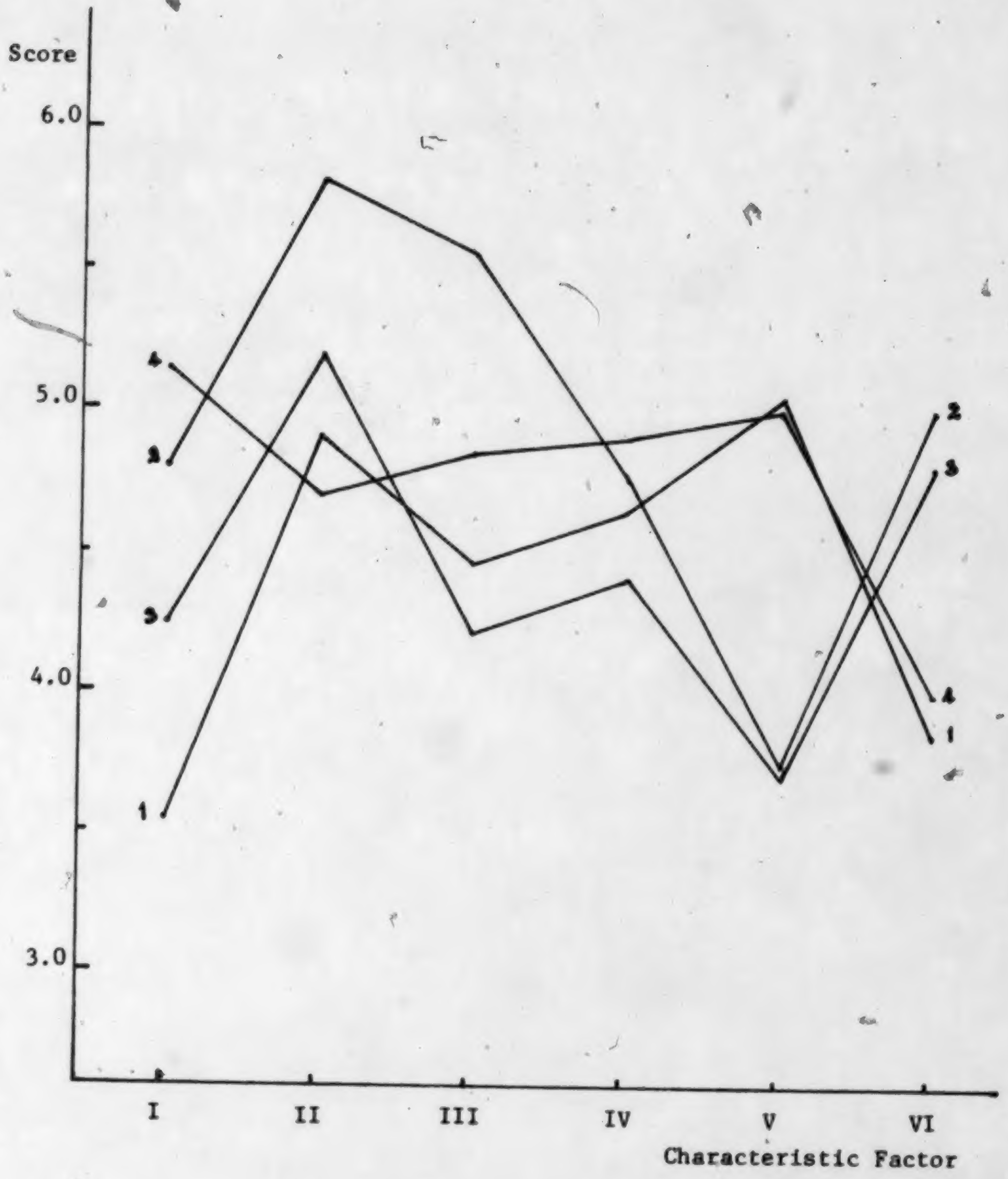
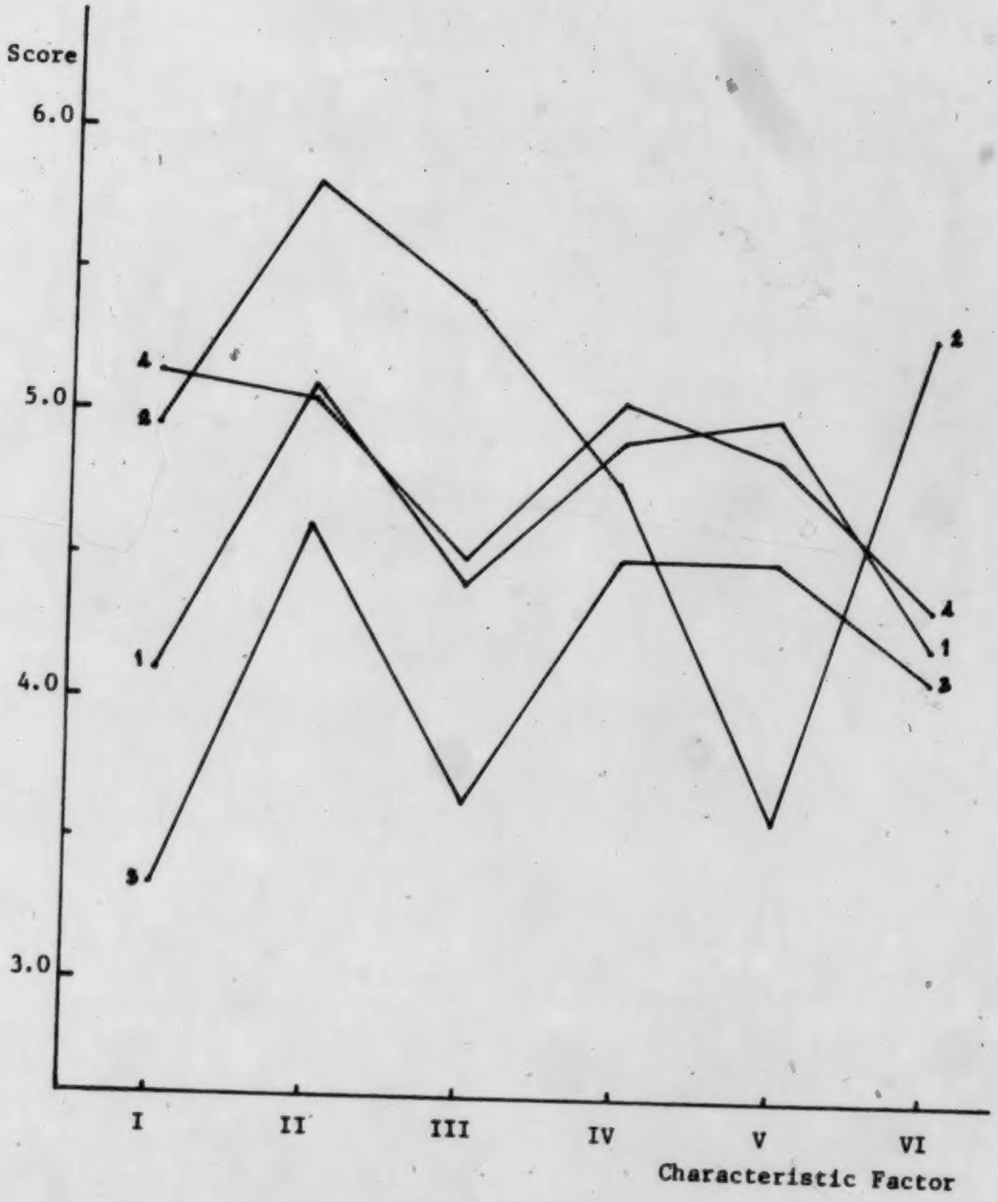


Figure 10

Representative Profiles of Occupational Groups - Females



differed from each other, an analysis of variance among occupational groups was carried out. The basic data unit for this analysis was the average of the individual characteristic-factor scores over all occupations in the same occupational group. The data matrix was of order characteristic factor X subject X occupational group. Since these scores had not been standardized, it could not be assumed that scores from different characteristic factors were on the same scaling unit. Thus, an analysis which assumed a comparable scaling unit among characteristic factors could not be used. Accordingly, the analysis was carried out with the data on one characteristic factor at a time. This has been done by using a one-way analysis of variance with repeated measurements over the categories of occupational groups (Winer, 1971, p. 261). When the probability of the F-ratio was less than .05, a multiple comparison was applied to all group means using the Newman-Keuls procedure (Winer, 1971, p. 217).

In all cases of the analysis of variance, the probability of the computed F-ratio was far less than .001. Thus, a multiple comparison among the four means was applied after each main analysis. Results of both the main and the posterior analyses are given in Tables 53 to 64, Appendix B. For purposes of discussion, a summary of results from the posterior tests are presented schematically in Table 32 for males and in Table 33 for females.

In Tables 32 and 33, the tabled numbers represent occupational groups as they appeared in Tables 30 and 31. They are ordered according to the size of group means. The group on the left had a smaller mean than that on the right. The underlines indicate results of the posterior

Table 32

A Comparison among Occupational Group Means - Males *

	Characteristic Factor	Results of Posterior Tests
I	Personal Satisfaction	1 3 2 4
II	Values to Society	4 1 3 2
III	Life Security	3 1 4 2
IV	Prestige or General Impression	$3\ \underline{1\ \ 2}\ 4$
V	Physical Security	$\underline{3\ \ 2}\ \underline{4\ \ 1}$
VI	Power	$\underline{1\ \ 4}\ \underline{3\ \ 2}$

Table 33

A Comparison among Occupational Group Means - Females *

	Characteristic Factor	Results of Posterior Tests
I	Personal Satisfaction	$3\ 1\ \underline{2\ \ 4}$
II	Values to Society	$3\ \underline{4\ \ 1}\ 2$
III	Life Security	$3\ \underline{1\ \ 4}\ 2$
IV	Prestige or General Impression	$3\ \underline{2\ \ 1\ \ 4}$
V	Physical Security	$2\ 3\ \underline{4\ \ 1}$
VI	Power	$\underline{3\ \ 1\ \ 4}\ 2$

* Tabled numbers are occupational group numbers.

tests. Occupational groups underlined by a common line do not differ; those not underlined by a common line differ.

As stated earlier, the purpose of these analyses was to make a comparison among group representative profiles within each group of subjects. Results of the analyses (Tables 32 and 33) showed that these profiles differed from each other on the same characteristic factor. However, to make the comparison more meaningful, the means of these groups on the same characteristic factor were further classified into four categories: very high, high, moderate, and low. Results of the posterior tests were used as a basis for this classification. When the results of posterior tests on any characteristic factor showed that all occupational groups were different, they were classified as being very high, high, moderate, and low on that characteristic factor; when the test results showed three groupings, they were classified as being high, moderate, and low; and when only two groupings were indicated by the tests, they were classified as being high, and low. Since there were no more than three groupings on all characteristic factors for females, no occupational group had characteristic factors classified as being very high for females. The absolute values of means on the characteristic factors of the occupational groups were not used in this classification scheme because there were unequal numbers of occupations in each occupational group. Consequently, for the Skilled and Semiskilled occupational group (with 16 occupations), it was more difficult to get a very high or a very low mean than it was for the Creative-Artistic occupational group (which has only 5 occupations).

Table 34 shows results of the classification for males, and

Table 35 for females.

It is evident that subjects viewed the four occupational groups as having distinctive characteristic patterns. Each group is regarded as being high on some characteristic factors and low on the others at the same time. It is possible, from each table, to indicate which group is generally viewed more favorably than the others. As can be easily seen from Tables 34 and 35, the most favorable occupations were those of Professional and Trained occupations.

The information presented in Tables 34 and 35 is regarded as a description of occupational groups in terms of the six characteristic factors. They are the description perceived by male and female subjects in this study.

A Comparison of Profiles from Males and Females. Earlier in this chapter, while the focus of study was on groups of occupations, the problem of sex differences was briefly examined. There were indications that differences did indeed exist. This finding led to a separate analysis for each subject group. It was found that a group of occupations from one subject group had a counterpart from another subject group. Accordingly, the corresponding occupational groups were given the same labels. Although these corresponding groups were similar in composition , they were not entirely the same. This raised the speculation that their descriptions, in terms of characteristic factors, would differ to some degree. This problem was further examined and the results of the analysis are presented in the following paragraphs.

The focus of this study was on the differences between profiles from corresponding occupational groups. For a visual comparison, the

Table 34

A Classification of Characteristic Factors among Occupational Groups - Males

Occupational Group	Category			
	Very High	High	Moderate	Low
1 Skilled and Semiskilled	-	V-Physical Security	II-Values to Society III-Life Security IV-Prestige	I-Personal Satisfaction VI-Power
2 Professional and Trained	II-Values to Society III-Life Security	I-Personal Satisfaction VI-Power	IV-Prestige	V-Physical Security
3 Outdoor-Physical	-	II-Values to Society	I-Personal Satisfaction VI-Power	III-Life Security IV-Prestige V-Physical Security
4 Creative-Artistic	I-Personal Satisfaction	III-Life Security IV-Prestige V-Physical Security	-	II-Values to Society VI-Power

Table 35

A Classification of Characteristic Factors among Occupational Groups - Females

Occupational Group	Category			
	Very High	High	Moderate	Low
1 Skilled and Semiskilled	-	IV-Prestige V-Physical Security	I-Personal Satisfaction II-Values to Society III-Life Security	VI-Power
2 Professional and Trained	-	I-Personal Satisfaction II-Values to Society III-Life Security VI-Power	-	V-Physical Security
3 Outdoor-Physical	-	-	V-Physical Security	I-Personal Satisfaction II-Values to Society III-Life Security IV-Prestige VI-Power
4 Creative-Artistic	-	I-Personal Satisfaction IV-Prestige V-Physical Security	II-Values to Society III-Life Security	VI-Power

two representative profiles from each occupational group were plotted together. Figures 11 to 14 show the profiles from Occupational Groups 1 to 4 respectively. Tests of differences between all possible pairs of profiles from different subject groups were carried out. A one-way multivariate analysis of variance (Bay, 1969; Morrison, 1967, pp. 159-170) was used for this purpose. Results of the analysis are given in Table 65, Appendix B. Table 36 presents a summary of these results.

Results of the tests on pairs of noncorresponding profiles were as expected. All differences attained significance. Results of the tests of differences between corresponding profiles were not the same for all pairs. Three out of four pairs yielded significant differences. The only nonsignificant difference was the pair from Occupational Group 2 (i.e., the Professional and Trained occupations).

As the results of these tests indicate, only one occupational group had the same characteristic pattern. The other three occupational groups could not be regarded as having the same characteristic patterns. The results of the tests seem to support the speculation that the descriptions of these corresponding occupational groups were different.

However, two sources of variance may simultaneously contribute to these differences; variance due to the occupations, and variance due to sex. Since the number of occupations in the corresponding occupational groups was not the same, the differences between the corresponding groups could not be regarded as an indication of sex differences alone. If sex differences were to be verified, the differences due to occupations must be controlled. One way to do this is to base the multivariate analysis on the overlapping or common occupations between

Figure 11

Representative Profiles of Occupational Group 1

from Males and Females

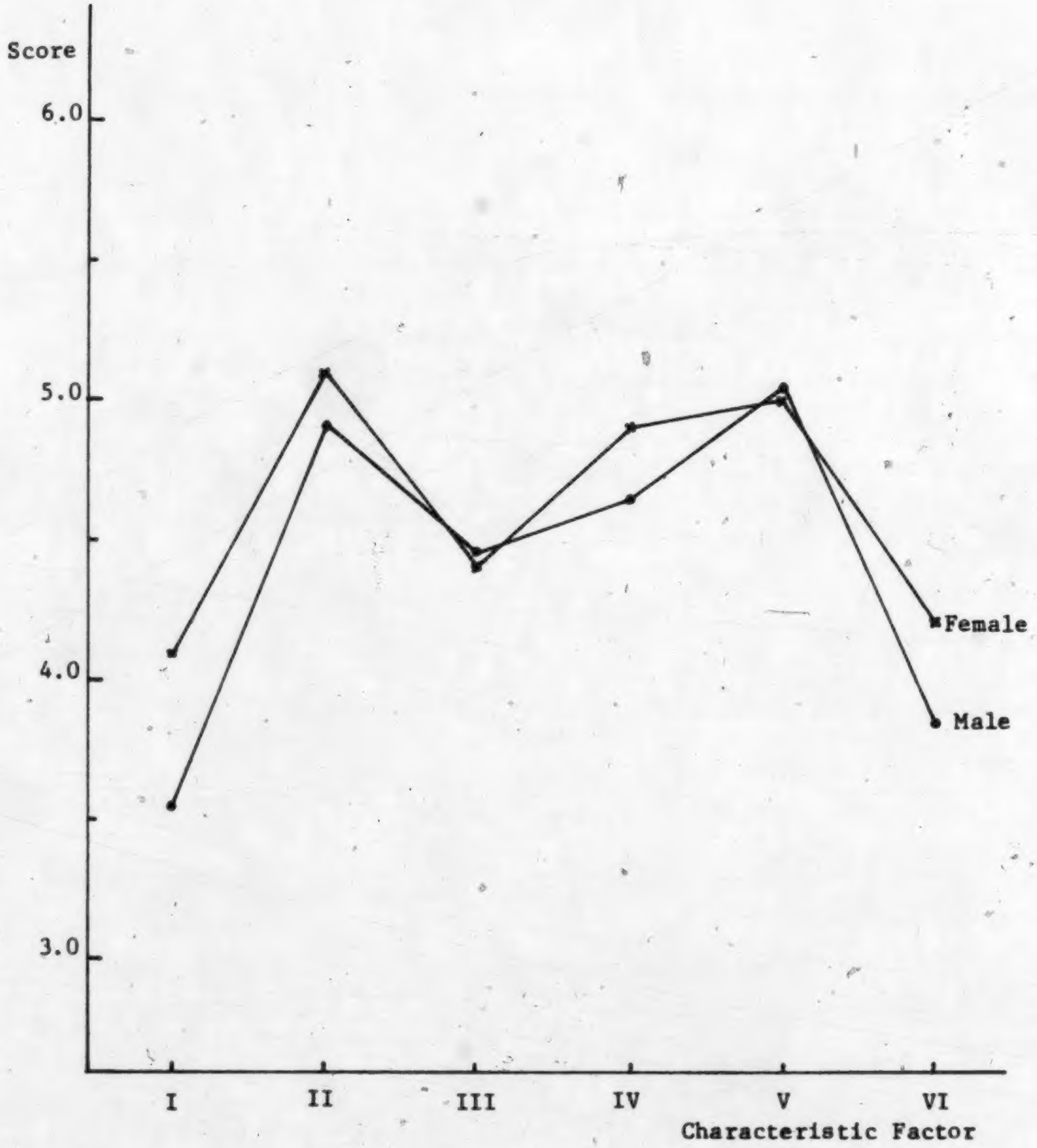


Figure 12

Representative Profiles of Occupational Group 2

from Males and Females

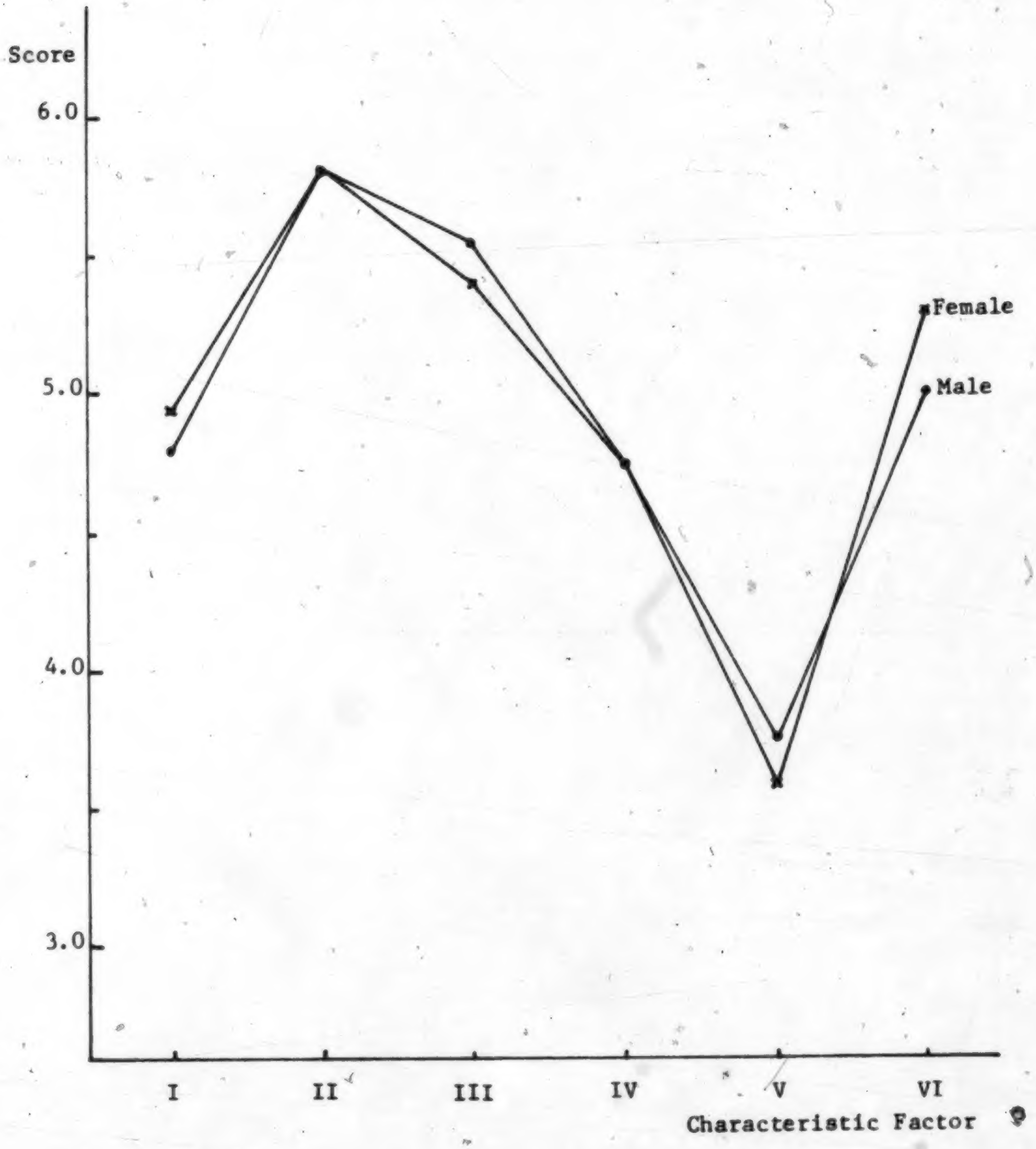


Figure 13

Representative Profiles of Occupational Group 3

from Males and Females

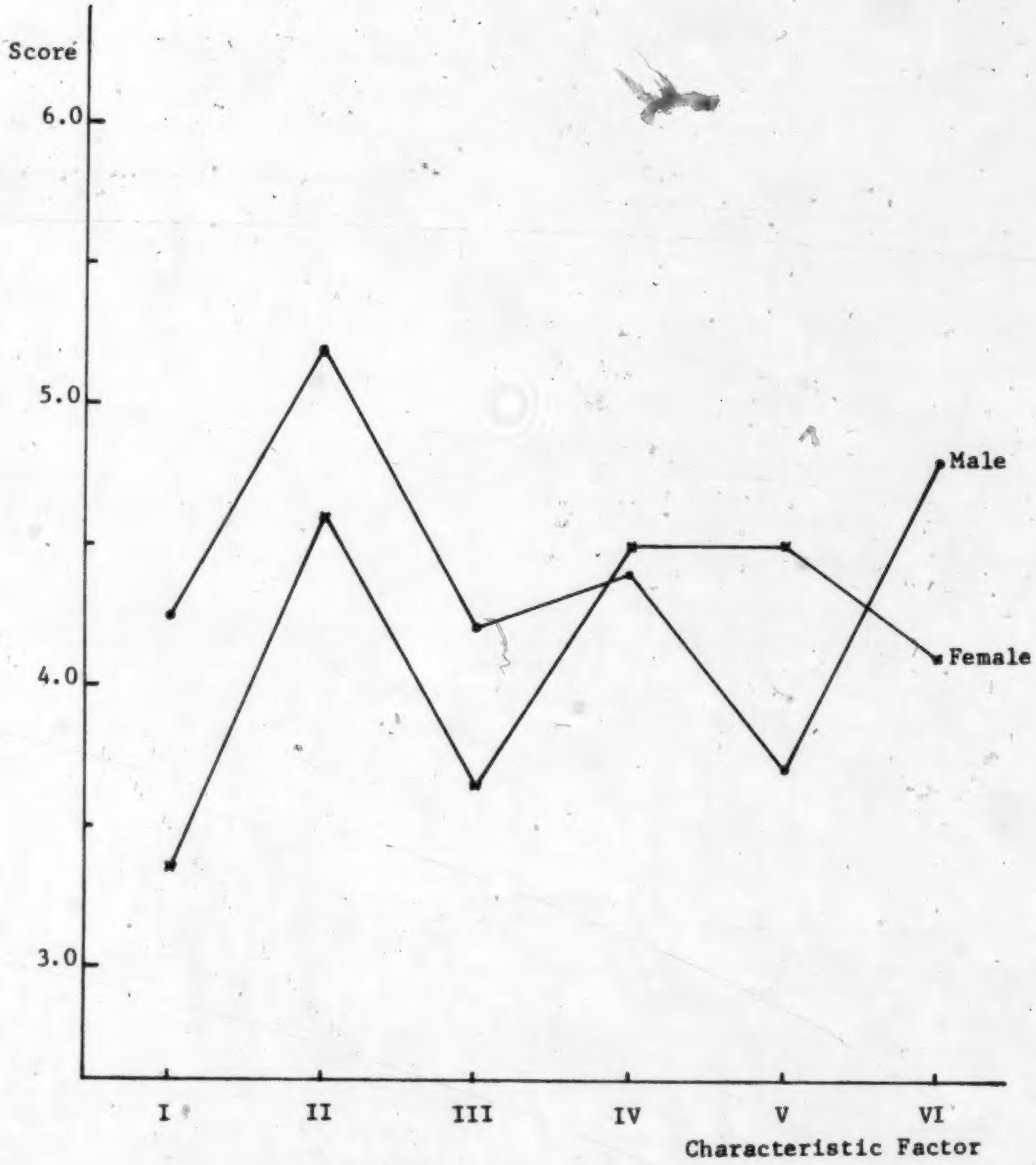


Figure 14

Representative Profiles of Occupational Group 4 from Males and Females

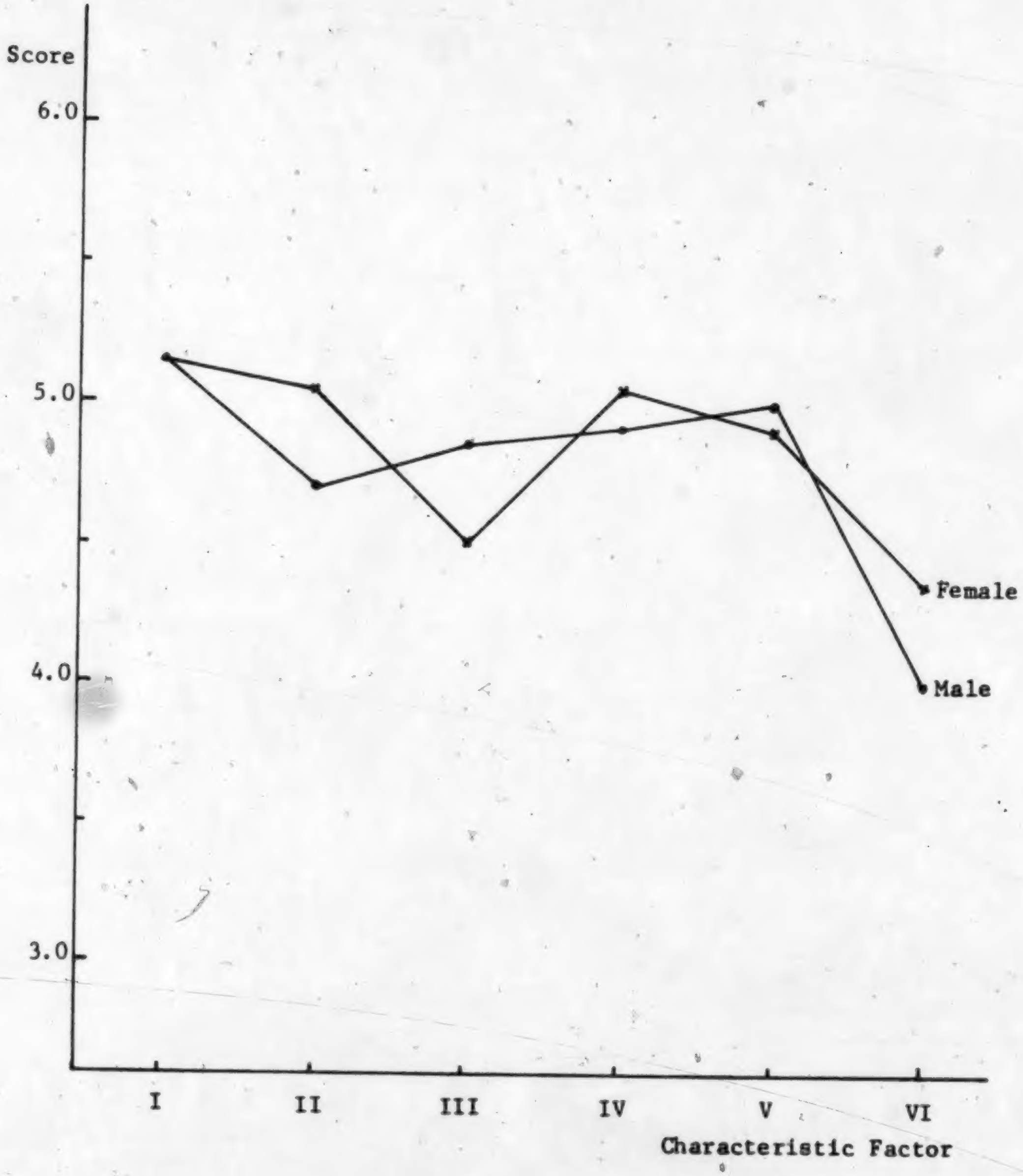


Table 36

A Comparison of Representative Profiles from Males and Females *

		Females			
	Occ. Group	1	2	3	4
Males	1	0.0424	0.0001	0.0001	0.0001
	2	0.0001	0.3089	0.0001	0.0001
	3	0.0001	0.0001	0.0001	0.0001
	4	0.0001	0.0001	0.0001	0.0001

* Tabled values are probabilities of F-ratio. The actual values of the probabilities are less than or equal to those appearing in the table.

corresponding groups.

Accordingly, the occupations not common between corresponding occupational groups were removed. As indicated in Table 26, the numbers of occupations common or overlapping between corresponding groups were 14 for the first group, 13 for the second group, and four for both the third and the fourth groups. A mean score for each "common-occupational group" was calculated from values in Tables 28 and 29. Results are given in Table 37 for males and Table 38 for females. For a visual comparison between corresponding common-occupational groups, profiles of these mean scores were plotted together. Figures 15 to 18 show profiles of these corresponding common-occupational groups from the first to the fourth pairs respectively.

A one-way multivariate analysis of variance (Bay, 1969; Morrison, 1967, pp. 159-170) was carried out with the data of all possible

Table 37

Mean Scores of Common-Occupational Groups on Characteristic Factors - Males

Occupational Group	No. of Occ.	Characteristic Factors *					
		I	II	III	IV	V	VI
1 Skilled and Semiskilled	14	3.517	4.889	4.408	4.662	5.100	3.779
2 Professional and Trained	13	4.823	5.782	5.552	4.732	3.749	5.005
3 Outdoor-Physical	4	3.507	4.935	3.788	4.438	4.108	4.351
4 Creative-Artistic	4	4.967	4.638	4.554	4.847	5.112	3.813

Table 38

Mean Scores of Common-Occupational Groups on Characteristic Factors - Females

Occupational Group	No. of Occ.	Characteristic Factors *					
		I	II	III	IV	V	VI
1 Skilled and Semiskilled	14	4.031	5.109	4.387	4.901	4.940	4.200
2 Professional and Trained	13	4.982	5.942	5.687	4.825	3.523	5.415
3 Outdoor-Physical	4	3.384	4.762	3.760	4.350	4.105	4.260
4 Creative-Artistic	4	5.032	5.007	4.487	5.150	5.000	3.990

* I-Personal Satisfaction, II-Values to Society, III-Life Security, IV-Prestige or General Impression, V-Physical Security, and VI-Power.

Figure 15

Profiles of Common-Occupational Group 1

from Males and Females

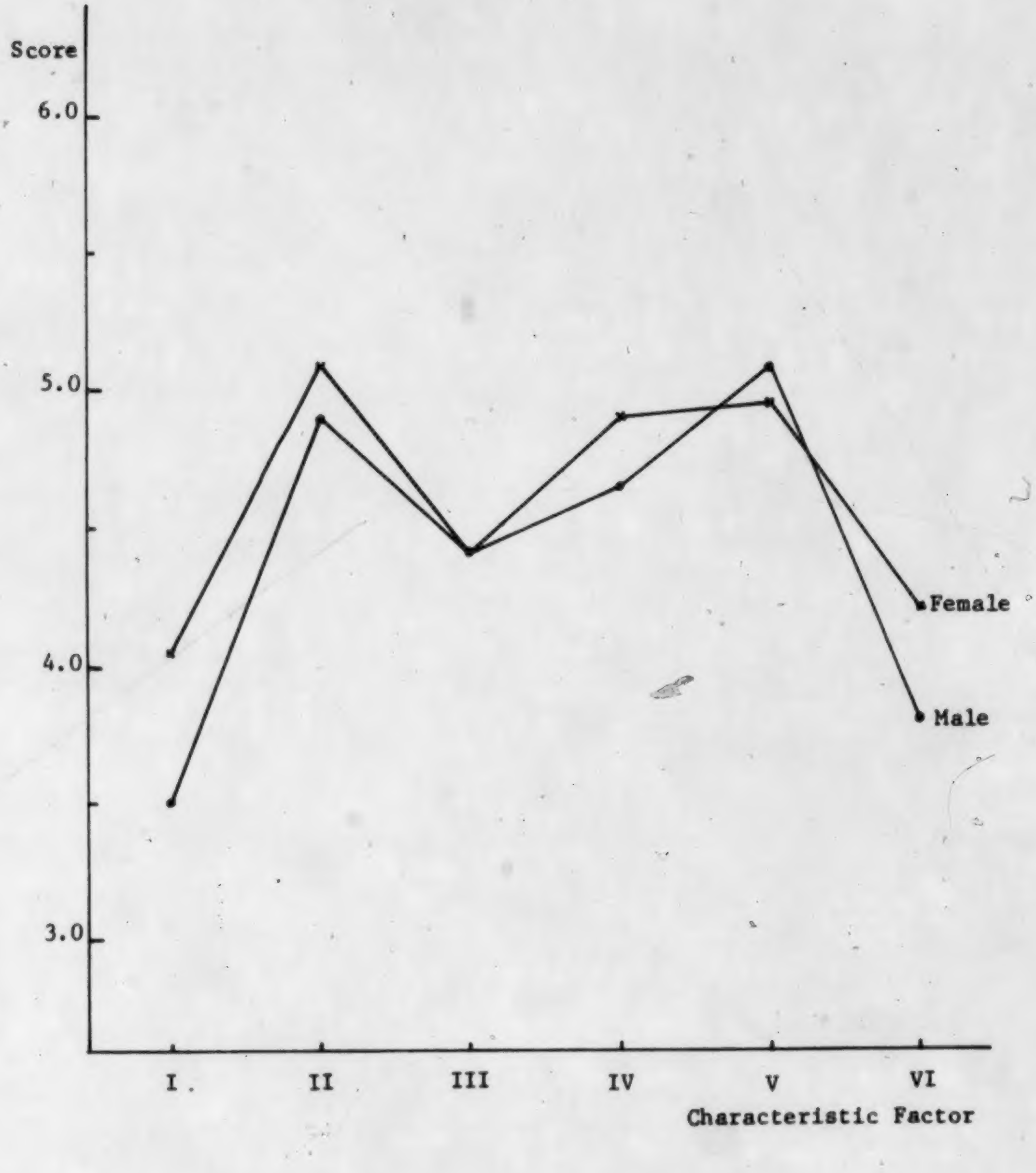


Figure 16

Profiles of Common-Occupational Group 2

from Males and Females

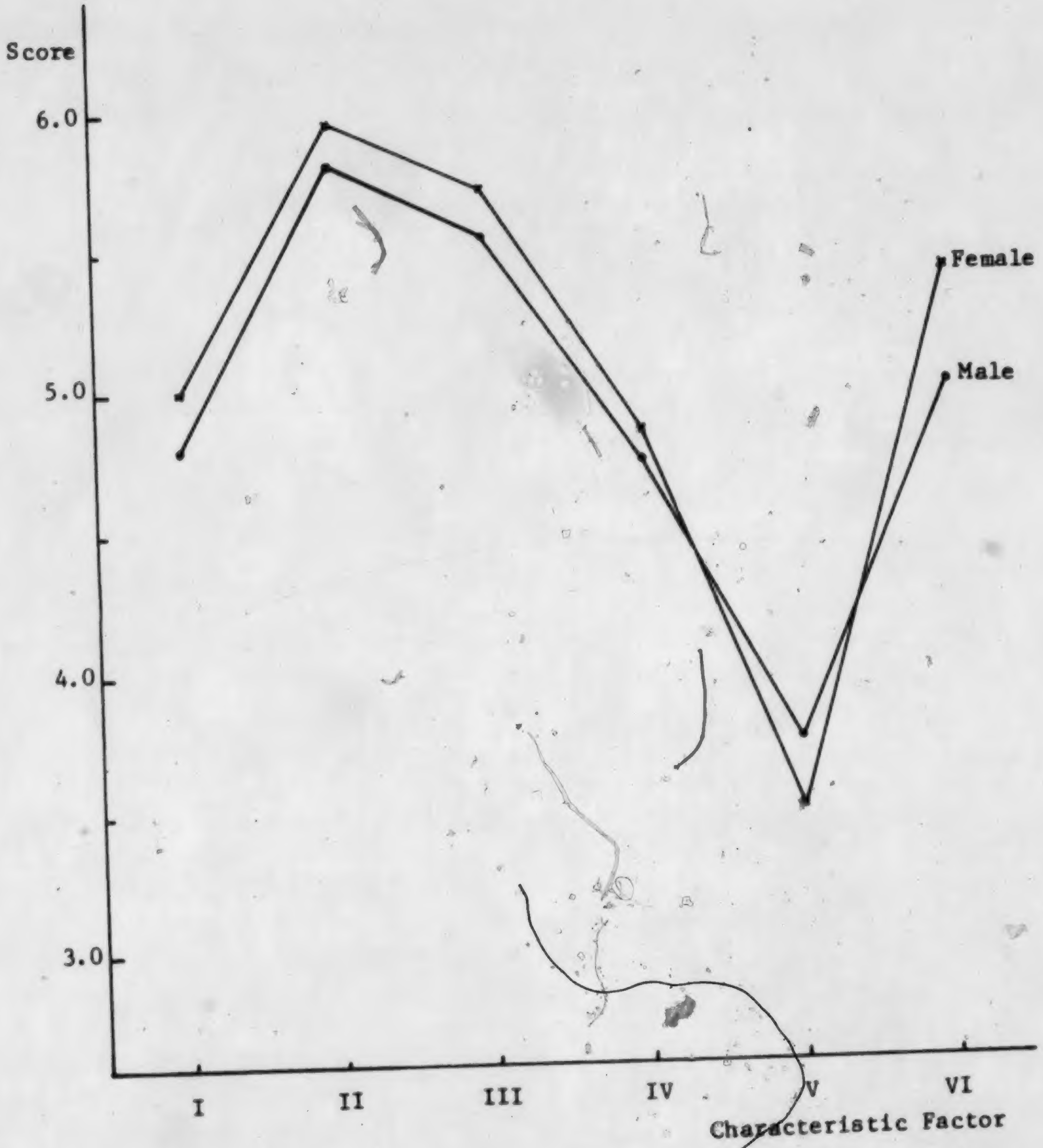


Figure 17

Profiles of Common-Occupational Group 3

from Males and Females

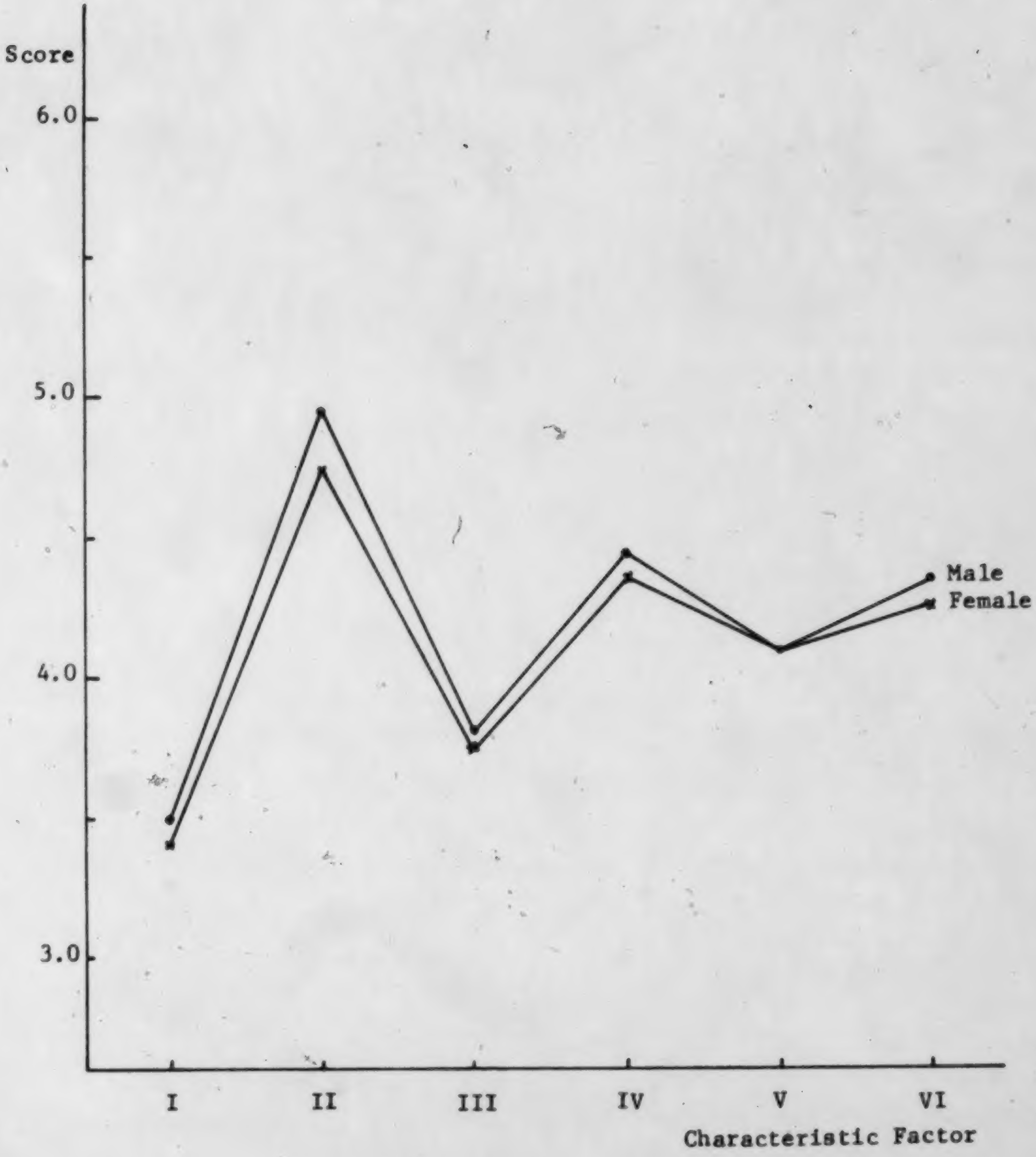
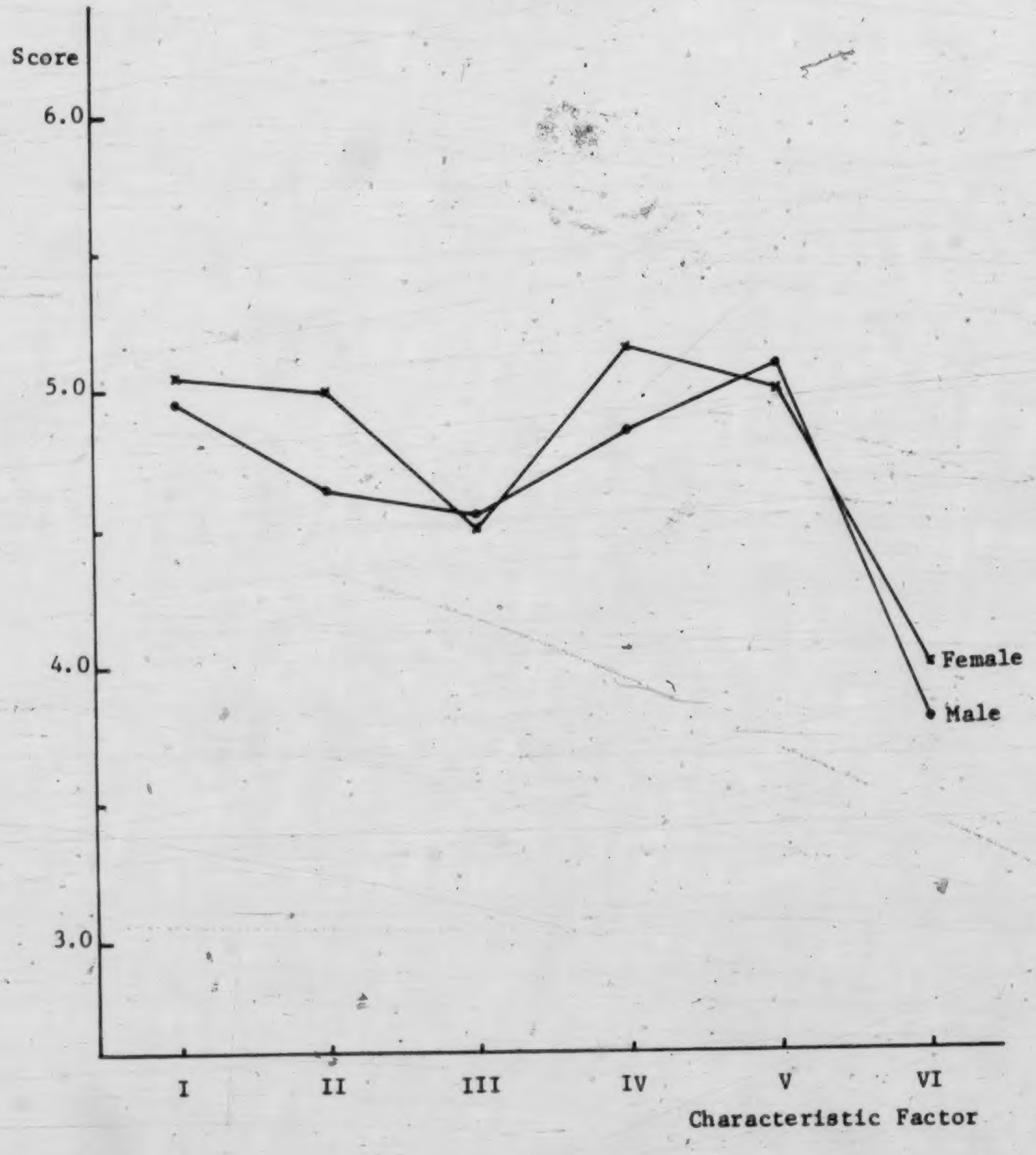


Figure 18

Profiles of Common-Occupational Group 4

from Males and Females



pairs of profiles from males and females. Results of the analysis are given in Table 66, Appendix B. A summary of the results is presented in Table 39.

Table 39

A Comparison of Common-Occupational Group Profiles from Males and Females *

		Females			
	Occ. Group	1	2	3	4
Males	1	0.0898	0.0001	0.0001	0.0001
	2	0.0001	0.2816	0.0001	0.0001
	3	0.0001	0.0001	0.9960	0.0001
	4	0.0001	0.0001	0.0001	0.0899

* Tabled values are probabilities of F-ratio. The actual values of the probabilities are less than or equal to those appearing in the table.

Results of the tests of differences on pairs of noncorresponding profiles were the same as those previously obtained when nonoverlapping occupations were included. All differences attained significance. However, results of the tests of differences between corresponding common-occupational groups were all nonsignificant. No corresponding common-occupational groups differed regarding their characteristic patterns as perceived by males and females. It was evident that the differences attained in the previous analyses were due to the nonoverlapping occupations. Thus, in examining the characteristic patterns of occupations, there was no indication of differences between sexes in terms of the way they perceived a common group of occupations. However, regarding the occupational groupings, males and females tended to cluster occupations into groups differently.

CHAPTER 6

SUMMARY, DISCUSSION, AND IMPLICATIONS

Summary

There were two phases in this study. In the first phase, the purpose was to identify factors of occupational characteristics as perceived by students at the grade nine level. Two groups of 267 male and female students from Hardisty Junior High School, Edmonton, were asked to rate two lists of occupations (21 titles each) on a set of 41 Semantic Differential (SD) scales. A principal-axes factor analysis and varimax rotation were applied to the intercorrelations among scales. The resulting rotated factors were called occupational characteristics. Six characteristic factors were identified from the analysis. They were: Personal Satisfaction, Values to Society, Life Security, Prestige or General Impression, Physical Security, and Power.

Eighteen SD scales measuring the six identified characteristic factors were selected for data collection in the second phase. The purpose of the second phase was to group a sample of occupations regarding their similar characteristic patterns. Another group of subjects, 93 male and female grade nine students at Balwin Junior High School, Edmonton, were asked to rate a new list of 30 occupations on the selected scales. A principal components analysis and varimax rotation were performed on the intercorrelations among occupations. The resulting rotated components were termed occupational groups. Since there were indications that differences exist between boys and girls, the analysis was based on sex groups. Four occupational groups were found separately for each subject group. However, the occupational groups corresponded between sexes, so the four groupings were given the same names across the two sex groups. The four occupational groups were: Skilled and Semiskilled, Professional and Trained, Ourdoor-Physical, and Creative-Artistic.

A profile analysis was carried out both within and between sex groups. Results of the analysis between corresponding occupational groups of males and females, indicated that there were differences between characteristic patterns when the numbers of occupations included were not the same. However, the differences disappeared when only the overlapping occupations between corresponding occupational groups were used in the analysis. The results indicated that, in general, boys and girls perceived the occupation in the same way. The differences appeared in some occupations, however, and resulted in different numbers of occupations included in the corresponding occupational groups.

Discussion

Occupational Characteristics. In chapter 2, after a review of predetermined-factor studies, a summary regarding characteristic factors previously used was made. This section will compare the factors used in those studies with the results of this study.

The results of studies identifying characteristic factors are important to this section. Studies of this category reviewed in chapter 2 were studies by Thomas (1961), Gonyea (1961), Terwilliger (1963), and Irvine (1969). However, as can be seen in Table 2, chapter 2, the factors found in the studies by Gonyea, Terwilliger, and Irvine did not conform to the concept of occupational characteristics as claimed, directly or indirectly, by the investigators. The factor structure they found was rather a system of occupational classification and their factors should be regarded as occupational groupings rather than occupational characteristic factors. Thus, the factors of these three studies cannot be used for comparison with the factors of this study. Thomas' factors can be regarded as occupational characteristic factors and will be used for comparison. However, his factors should not be relied on as identified factors since they were based upon his own speculation. In a sense, Thomas' factors should be treated in a similar manner as the predetermined factors. In effect, there are no identified factors from previous studies included in the comparison in this section.

Table 40 presents a summary of the characteristic factors from the present study, from the predetermined-factor studies, and from Thomas' speculation. There are two parts to Table 40. The first part presents a matching between factors from the present study and those from the other studies. The factor labels and descriptions from individual studies, and the individual factor scales from the present study are used as a basis for this matching. The remaining unmatched factors from the other studies are presented in the second part of the table. The preceeding number of each factor represents the order of the factor as reported, except that of the second column (i.e., that of the predetermined-factor studies) which represents the group number as summarized in chapter (pp. 26-27).

In the first part of Table 40, it can be seen that all factors

Table 40

Characteristic Factors Matched with Those from Other Studies

Present Study	Studies with Predetermined Factors *	Thomas' Speculation
	Corresponding Factors	
1 Personal Satisfaction	2 Personal Satisfaction	-
2 Values to Society	6 Helping Others or Service Values	6 Service to Society
3 Life Security	1 Financial Conditions 4 Advancement 6 Benefits	2 Financial Reward
4 Prestige or General Impression	4 Prestige	-
5 Physical Security	3 Security, and Working Conditions	-
6 Power	-	1 Power
	Noncorresponding Factors	
	3 Human Relationships 4 Independence 5 Level of Education and Intelligence 6 Responsibility	3 Crucial Roles 4 Education 5 Mental-Physical or White Collar vs. Blue Collar

* Numbers of factors in this column represent the numbers of groups of factors as summarized after a review of studies using predetermined factors (chapter 2).

from the present study have counterparts from the other studies. Among the six factors from the present study, the Power factor seems to be the least popular factor among previous studies. Only Thomas' study has a factor that corresponds to it. Regarding the complete matching of the six factors from the present study, all of the factors were recognized in previous studies. However, since this study revealed the six factors as a result of analysis and the other studies used predetermined factors, the complete correspondence of the six factors indicates a confirmation of those matched factors from previous studies. Conversely, it can be regarded as a sign of the validity of the characteristic-factor structure from the present study.

Since two factors in the present study (i.e., Life Security, and Physical Security) have more than one corresponding factor, this indicates that the factors identified in the present study are less specific than those in the other studies. In general, a specific factor would likely be applied to a specific group of people. The characteristic factors from the present study would be applicable to a more diversified group of people than those from previous studies.

In the second part of Table 40, four factors from the predetermined-factor studies and three factors from Thomas' study do not have corresponding factors from the present study. Since none of these studies conducted an identification analysis, the absence of their counterparts in the present study tends to discredit these factors. It indicates the nonexistence of these predetermined characteristic factors. However, whether the nonexistence of these factors is true for subjects at ninth-grade level only or true for all cannot be answered by this comparison.

In regard to the approach taken in this study, results of the first phase show that the multidimensional assumption is relevant to the problem and that the SD scales are appropriate for this purpose (i.e., the identification of occupational characteristic factors). The factors revealed by the analysis conform to the concept of occupational characteristics and indicate readiness for interpretation. This study did not suffer from an interpretation problem as did the study by Gonyea (1961) and as did partially, studies by Terwilliger (1963) and by Irvine (1969). As stated earlier, the results of these studies made it difficult to make an interpretation which conformed to the concept of occupational characteristics. It indicates, at least partially, that the technique of investigation used (i.e., Gonyea and Terwilliger used a technique which groups occupations, and Irvine, a technique which groups both occupations and scales simultaneously) was not appropriate for the problem. As a result, their identified factors are confounded between characteristics and groupings.

Occupational Groups. In the second phase of this study, two important points were considered. The first point was the grouping of occupations according to their characteristic patterns; and the second point, the problem of sex differences regarding the characteristic patterns of occupations. The findings of both points will be discussed respectively in this section.

When occupations have been analyzed, the next usual step is to classify them (Crites, 1969, p. 46). There are numerous attributes of occupations. Hence, there are numerous ways to classify an occupation.

Crites (1969) reviews six approaches to this enterprise. An occupation can be classified into groups by one of the following attributes: (1) aptitude, (2) interest, (3) personality, (4) worker functions, (5) industries, and (6) occupational life spans (pp. 46-53). Vocational psychologists present their own classification schemes which differ from one another. The difference is due partly to the attributes used as a basis for the classification. For example, Holland (1966) and Roe (1956) use personality as a basis while Super (1957) bases his scheme on occupational life spans, and the worker function is a basis used in The Dictionary of Occupational Titles (1966). However, the merits and shortcomings of these schemes have been well recognized. It has been suggested that a selection among these classification schemes be made in regard to the specific purpose of one own's study (Crites, 1969, p. 52; Zytowski, 1968, p. 41).

In the present study, the occupational grouping is also an occupational-classification scheme. It is based on the occupational characteristics identified in the study. As stated earlier, the term "occupational characteristics" refers to all attributes related to the occupation that can be perceived by an individual. Thus, this classification scheme cannot be put into any of the six categories cited by Crites. It is based on the interactions between the individual and the occupation. In a sense, the present scheme is concerned with all attributes related to both the individual and the occupation. In this regard, it can be seen that most of the six attributes, if not all, in Crites' classification schemes have been incorporated in the scheme. In effect, the classification scheme of occupations presented in this study takes into account more attributes than those of other schemes. However, the acceptance of the scheme in this study depends upon one own's specific purpose and on whether or not one accepts the characteristic factors identified in the first phase of this study.

The sample size of occupations used in this study was small in relation to the whole occupational world. This fact places a limitation to the inference of the findings. The occupational groups found in the present study should be regarded as being tentative. Confirmation from a large-scale study is necessary. However, in view of the results obtained, it demonstrates that the occupational characteristics identified in this study can be used to group occupations.

The problem of sex differences was examined closely in the second phase of study. Two steps were taken consecutively to identify whether differences existed, and if they existed, in what way. The first step was to examine whether the component structures of occupational groups were the same for males and females. By the component matching procedure, it was found that the two component structures were very similar but not the same. The finding was an indication that the differences between sexes existed regarding the occupational groupings, and led to further analyses based on sex groups. In the second step, the analysis was on the differences between characteristic patterns of corresponding occupational groups. The analysis revealed that when the numbers of occupations in the corresponding occupational groups were not the same, three out of four corresponding groups differed from each other. However, when only the overlapping occupations were used in the analysis, corresponding occupational groups did not differ from each other.

The results of the second step analysis seemed to point out that, if there were any difference between sexes, the difference would be mainly due to the difference in the clustering of occupations rather than due to the individual characteristic patterns of occupations. Based on this result, one could speculate that, if boys and girls were asked to rate an individual occupation on the six characteristic factors, they would tend to rate the same for most, if not all, occupations. However, due to the difference of ratings on some specific occupations, if they were asked to sort a set of occupations into the four occupational groups, differences on the inclusion of some occupations would occur. The difference would result in different number of occupations in the occupational groups.

It is interesting to speculate on reasons why boys and girls differ in their perceptions of some occupations. The answer to this question could lead one to a conclusion about sex differences. In order to examine this problem further, Table 41 was prepared. In this table, the nonoverlapping occupations, as in Table 27, are listed under each sex group and within each occupational group. Results from the transformed female matrix are used because the nonoverlapping occupations from using this matrix are the results after a trial to match them with those of the male matrix. They are likely to reflect more accurately the occupations which were grouped differently by the two subject groups.

In Table 41 there are nine occupations which belong to only one corresponding component (One occupation, Astronomer, appears in both sex groups but with different occupational groups). A closer inspection

Table 41

Nonoverlapping Occupations after a Component Matching Procedure

Occupational Group	Subject Group	
	Male	Female
1 Skilled and Semiskilled	2-Cattle Inspector 25-Astronomer	20-Sports Announcer
2 Professional and Trained	-	25-Astronomer
3 Outdoor-Physical	13-Service Station Attendant 16-Mechanic 22-Mailman	21-Chemist
4 Creative-Artistic	-	11-Secretary 19-Athletic Coach

on these nonoverlapping occupations revealed that they could be sorted into one of the following two categories:

1. The occupations which traditionally are conceived as being only male or only female occupations. There are six traditional male occupations (i.e., Cattle Inspector, Service Station Attendant, Mechanic, Mailman, Sports Announcer, and Athletic Coach) and one traditional female occupation (i.e., Secretary).

2. The occupations which may not have been part of the subject's experience. There are two occupations in this category: Astronomer, and Chemist. Though their titles are known to the subjects, the descriptions of their jobs may not have been clear to them.

The fact that some occupations are considered belonging to the male or female domain only is still apparent in the society today. The boys and girls in the sample are influenced by tradition and it is conceivable that their personal images of people in these occupations would differ based upon sex. This difference could have occurred in their ratings of these occupations and thus affected the results.

The fact that some occupations are not familiar to the subjects cannot be denied. There are many occupations in society and it is inconceivable to expect all students at this level to be familiar with all occupations. When faced with rating unfamiliar occupations, the subjects likely speculated. Thus, their ratings may have been influenced by ideal images or stereotypes rather than the reality or experience. In effect, the ratings between males and females may have differed depending upon their subjectivity, and thus, the analysis yielded diferent results. However, the problem was noted when the study was planned, and an attempt was made to minimize the problem. The presence of only two occupations in this category may attest to the success of this caution.

It is clear from the above discussion that differences in the inclusion of some occupations may have occurred because of the influence of the social images or stereotypes of those occupations and/or because of the unfamiliarity of the occupations. In view of the problem of sex differences, the findings indicate the fact that boys and girls would tend to rate the occupation differently if that occupation is traditionally considered as being a male or a female occupation only, and if the occupation is not well known to them.

It is surprising that boys' and girls' ratings were so similar.

They appear, for the most part, not to be influenced by the sex stereotypes. If the same study was carried out 30 years ago it may have produced quite different results. In regard to the current movement of women's liberation, the findings in this study may indicate a trend toward a completely new form of society in which sex difference in vocational behaviors is just an interesting topic in a historical record.

There were two previous studies reporting the findings of sex differences (Dipboye & Anderson, 1959; Thompson, 1966). As reviewed in chapter 2, the differences between sexes found in these two studies were in regard to the relative importance of occupational characteristics (i.e., occupational values or job characteristics).
This study did not investigate that problem. However, the findings of some sort of sex differences in previous studies and in the present study indicate that investigators should be aware of the matter when they concern themselves with a subject's perceptions of occupational characteristics.

Conclusion to the Findings. This study was designed as an exploratory study. It was carried out to explore the factor structure of occupational characteristics, and to demonstrate that these factors can be used to group occupations. According to these objectives, the study was successful. In addition, a third objective, to obtain a set of SD scales for use as a measure of occupational characteristics, was attained.

One hypothesis was tested. The problem of sex differences was examined. The finding that sex differences exist in terms of characteristic patterns of some specific occupations suggests that caution should be made in future studies concerning the perceptions of occupational characteristics.

Implications of the Findings

At the beginning of chapter 1, it was suggested that knowledge of an individual's perception of occupations is essential to the study of vocational differences, and that knowledge of vocational differences in turn is needed for people involved in counselling activities. This study was designed to clarify the nature of individual perception of occupations. The results confirm the idea that individual perception of occupations are multidimensional. The concept of multidimensional perception along with its factors (i.e., the occupational characteristic factors) could lead to other fruitful studies about vocational behaviors. Toward this direction, a study of differences or of the relationships concerning occupational perception and other interesting variables or traits is possible. Such a study could lead to an examination of the prediction of vocational behaviors using the occupational characteristic factors as independent variables.

This study was confined to subjects of a single grade level (i.e., grade nine students). It is possible that subjects at other grade levels perceive occupations differently. If this is the case, a study on the same problem with subjects at other grade levels or perhaps with adults is needed. Such a study would be complementary to this study and the findings very interesting. Combined with the results from the present study, findings from a further study could indicate the stability of occupational perceptions over a period of time in an individual's life, or it could reveal a developmental trend of the perception from early age to adulthood. This knowledge would be essential to the formulation of concepts in vocational study, and also to people responsible for counselling activities.

Because the sample size of the occupations used in the second phase was small, the occupational groups found in the study must be regarded as being tentative. A replication of this phase with a larger sample size is suggested. Knowledge of occupational groups contributes both to further research and to practical use. A study of the differences and relationships of these occupational groups would be interesting and meaningful. On the practical side, occupational groups can be used as a guideline for vocational counsellors in gathering occupational information for their students.

This is the first study which has identified occupational characteristic factors. Previous studies failed to explore this area. Whether the results of this study are confirmed by forthcoming studies remains to be seen. This investigator regards the findings of this study to be an important step toward furthering understanding of an individual's vocational behaviors. Hopefully, further insight into an individual's vocational behaviors can be acquired through future studies based on the findings of the present study.

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APPENDIX A

STATISTICS FROM PHASE 1

Table 42

Intercorrelations among Scales - Subgroup 1

No.	Scale	1	2	3	4	5	6	7	8
1	uncreative-creative	1.000							
2	taking-giving	0.276	1.000						
3	unnecessary-necessary	0.089	0.243	1.000					
4	perfect-imperfect	-0.290	-0.169	-0.392	1.000				
5	unreliable-reliable	0.214	0.257	0.464	-0.422	1.000			
6	skilled-unskilled	-0.474	-0.257	-0.262	0.365	-0.324	1.000		
7	sociable-unsociable	-0.214	-0.102	-0.148	0.163	-0.251	0.239	1.000	
8	poorly paid-well paid	0.316	0.107	0.236	-0.298	0.292	-0.422	-0.198	1.000
9	dangerous-safe	0.142	0.078	-0.148	-0.018	0.084	0.043	-0.077	-0.001
10	successful-unsuccessful	-0.466	-0.140	-0.249	0.379	-0.346	0.485	0.273	-0.512
11	rough-smooth	0.150	0.004	-0.127	-0.050	0.087	-0.077	-0.074	0.126
12	powerful-powerless	-0.156	-0.069	-0.279	0.260	-0.299	0.303	0.226	-0.370
13	new-old	-0.114	-0.002	-0.052	0.134	-0.087	0.184	0.089	-0.191
14	meaningless-meaningful	0.281	0.247	0.499	-0.395	0.379	-0.338	-0.223	0.340
15	interesting-uninteresting	-0.522	-0.278	-0.240	0.328	-0.273	0.463	0.248	-0.394
16	boring-enjoyable	0.505	0.266	0.250	-0.321	0.301	-0.459	-0.253	0.396
17	good-bad	-0.398	-0.288	-0.363	0.420	-0.411	0.416	-0.264	-0.403
18	unimportant-important	0.165	0.195	0.631	-0.343	0.446	-0.269	-0.177	0.308
19	kind-cruel	-0.259	-0.274	-0.231	0.265	-0.300	0.247	0.316	-0.168
20	nice-awful	-0.335	-0.245	-0.285	0.354	-0.339	0.338	0.295	-0.287
21	serving-receiving	-0.165	-0.312	-0.243	0.176	-0.263	0.120	0.206	-0.035
22	weak-strong	0.118	0.137	0.359	-0.267	0.279	-0.205	-0.188	0.229
23	unstable-stable	0.217	0.120	0.356	-0.303	0.488	-0.295	-0.244	0.324
24	dark-bright	0.346	0.210	0.233	-0.295	0.321	-0.360	-0.233	0.277
25	easy-difficult	0.138	0.084	0.169	-0.088	0.120	-0.272	-0.046	0.127
26	sad-happy	0.392	0.176	0.193	-0.286	0.312	-0.311	-0.285	0.241
27	feminine-masculine	-0.089	0.024	0.215	-0.115	0.166	-0.035	-0.019	0.143
28	unpleasant-pleasant	0.444	0.233	0.210	-0.283	0.325	-0.402	-0.261	0.349
29	rich-poor	-0.334	-0.131	-0.184	0.330	-0.274	0.410	0.218	-0.671
30	simple-complex	0.305	0.082	0.198	-0.250	0.195	-0.449	-0.139	0.380
31	unselfish-selfish	-0.110	-0.290	-0.173	0.144	-0.199	0.177	0.188	-0.044
32	worthless-valuable	0.253	0.237	0.534	-0.374	0.431	-0.390	-0.241	0.394
33	secure-insecure	-0.194	-0.119	-0.309	0.339	-0.424	0.319	0.265	-0.357
34	superior-inferior	-0.251	-0.085	-0.304	0.311	-0.333	0.314	0.202	-0.407
35	tense-relaxed	0.113	0.086	0.057	-0.113	0.167	-0.052	0.002	-0.032
36	temporary-permanent	0.182	0.152	0.334	-0.312	0.342	-0.296	-0.199	0.301
37	dependent-independent	0.047	0.017	-0.048	0.038	-0.028	-0.040	0.078	0.019
38	honest-dishonest	-0.153	-0.259	-0.272	0.271	-0.345	0.215	0.264	-0.161
39	exciting-dull	-0.445	-0.170	-0.263	0.307	-0.269	0.427	0.271	-0.351
40	undemanding-demanding	0.157	0.168	0.295	-0.203	0.270	-0.241	-0.249	0.271
41	clean-dirty	-0.213	-0.067	-0.008	0.161	-0.156	0.172	0.162	-0.231
	Mean	4.631	4.980	5.412	3.671	5.082	2.625	2.664	4.834
	Standard Deviation	2.150	1.725	1.719	1.410	1.596	1.828	1.561	1.684

Table 42 (Continued)

No.	9	10	11	12	13	14	15	16	17	18	19
1											
2											
3											
4											
5											
6											
7											
8											
9	1.000										
10	-0.055	1.000									
11	0.441	-0.163	1.000								
12	0.260	0.419	0.131	1.000							
13	0.087	0.201	-0.011	0.222	1.000						
14	-0.018	-0.410	0.030	-0.337	-0.075	1.000					
15	0.039	0.486	-0.075	0.379	0.185	-0.431	1.000				
16	-0.012	-0.495	0.061	-0.348	-0.186	0.425	-0.833	1.000			
17	0.029	0.476	-0.067	0.373	0.182	-0.511	0.662	-0.674	1.000		
18	-0.123	-0.364	-0.027	-0.375	-0.106	0.599	-0.448	0.450	-0.566	1.000	
19	-0.126	0.320	-0.189	0.166	0.045	-0.336	0.370	-0.329	0.453	-0.368	1.000
20	-0.092	0.404	-0.198	0.257	0.092	-0.402	0.510	-0.473	0.615	-0.438	0.685
21	-0.071	0.108	-0.033	0.048	-0.079	-0.232	0.211	-0.222	0.261	-0.314	0.330
22	-0.226	-0.308	-0.217	-0.536	-0.156	0.360	-0.348	0.348	-0.362	0.444	-0.239
23	-0.043	-0.419	0.072	-0.373	-0.148	0.409	-0.342	0.331	-0.417	0.478	-0.387
24	0.131	-0.378	0.168	-0.298	-0.096	0.367	-0.435	0.418	-0.452	0.314	-0.386
25	-0.240	-0.201	-0.260	-0.225	-0.095	0.191	-0.207	0.159	-0.175	0.194	-0.001
26	0.169	-0.418	0.192	-0.264	-0.118	0.352	-0.466	0.490	-0.473	0.315	-0.410
27	-0.248	-0.062	-0.233	-0.318	-0.157	0.204	-0.128	0.102	-0.173	0.225	-0.033
28	0.119	-0.484	0.195	-0.291	-0.158	0.378	-0.604	0.623	-0.606	0.433	-0.416
29	-0.019	0.532	-0.160	0.390	0.247	-0.359	0.434	-0.399	0.413	-0.350	0.262
30	-0.147	-0.362	-0.054	-0.296	-0.183	0.287	-0.380	0.316	-0.334	0.291	-0.171
31	-0.138	0.116	-0.032	0.098	0.017	-0.251	0.241	-0.248	0.271	-0.245	0.325
32	-0.098	-0.405	0.019	-0.365	-0.092	0.604	-0.463	0.444	-0.569	0.688	-0.381
33	-0.036	0.427	-0.100	0.369	0.156	-0.369	0.335	-0.353	0.436	-0.434	0.338
34	0.091	0.397	0.006	0.457	0.217	-0.337	0.398	-0.385	0.410	-0.385	0.198
35	0.252	-0.067	0.278	0.187	0.028	0.081	-0.031	0.082	-0.086	0.014	-0.159
36	-0.014	-0.297	0.029	-0.276	-0.062	0.342	-0.237	0.241	-0.340	0.351	-0.228
37	0.051	-0.017	0.028	-0.059	-0.129	-0.043	-0.029	0.033	0.009	-0.054	0.004
38	-0.083	0.217	-0.073	0.176	0.037	-0.359	0.270	-0.292	0.382	-0.346	0.379
39	0.104	0.481	0.035	0.376	0.202	-0.408	0.700	-0.705	0.608	-0.408	0.315
40	-0.096	-0.264	-0.153	-0.305	-0.077	0.339	-0.369	0.342	-0.399	0.370	-0.187
41	-0.289	0.248	-0.411	0.042	0.062	-0.138	0.131	-0.181	0.190	-0.091	0.258
M	5.095	3.076	4.085	3.645	4.495	4.991	3.201	4.403	2.895	5.282	2.976
Sd	1.878	1.629	1.753	1.658	1.916	1.698	2.072	2.085	1.752	1.778	1.304

Table 42 (Continued)

No.	20	21	22	23	24	25	26	27	28	29	30
1											
2											
3											
4											
5											
6											
7											
8											
9											
10											
11											
12											
13											
14											
15											
16											
17											
18											
19											
20	1.000										
21	0.317	1.000									
22	-0.315	-0.170	1.000								
23	-0.417	-0.218	0.423	1.000							
24	-0.414	-0.161	0.248	0.388	1.000						
25	-0.090	-0.088	0.197	0.145	0.030	1.000					
26	-0.454	-0.240	0.300	0.382	0.492	0.032	1.000				
27	-0.055	-0.099	0.395	0.179	0.053	0.124	0.087	1.000			
28	-0.530	-0.219	0.331	0.424	0.552	0.045	0.603	0.139	1.000		
29	0.340	0.095	-0.296	-0.400	-0.376	-0.122	-0.344	-0.090	-0.467	1.000	
30	-0.277	-0.076	0.264	0.292	0.233	0.522	0.235	0.144	0.266	-0.423	1.000
31	0.274	0.352	-0.179	-0.187	-0.160	-0.108	-0.242	-0.083	-0.199	0.062	-0.124
32	-0.463	-0.312	0.440	0.468	0.377	0.243	0.371	0.224	0.492	-0.420	0.417
33	0.411	0.206	-0.395	-0.535	-0.355	-0.095	-0.415	-0.172	-0.420	0.428	-0.282
34	0.313	0.097	-0.383	-0.414	-0.286	-0.198	-0.305	-0.183	-0.316	0.448	-0.399
35	-0.156	-0.143	-0.060	0.078	0.151	-0.214	0.193	-0.128	0.215	-0.005	-0.185
36	-0.256	-0.126	0.349	0.444	0.302	0.192	0.279	0.107	0.291	-0.349	0.335
37	0.049	0.007	0.027	-0.023	0.067	-0.039	-0.008	0.017	0.047	-0.033	0.050
38	0.399	0.389	-0.255	-0.355	-0.233	-0.052	-0.348	-0.066	-0.338	0.226	-0.103
39	0.467	0.107	-0.371	-0.316	-0.395	-0.248	-0.417	-0.179	-0.546	0.393	-0.361
40	-0.265	-0.174	0.333	0.305	0.232	0.286	0.235	0.252	0.264	-0.279	0.349
41	0.244	0.153	0.017	-0.104	-0.180	0.091	-0.230	0.200	-0.218	0.305	-0.072
M	2.997	2.518	4.564	4.913	4.534	4.561	4.673	4.457	4.633	3.546	4.574
Sd	1.468	1.416	1.520	1.545	1.474	1.712	1.345	1.485	1.632	1.398	1.701

Table 42 (Continued)

NO.	31	32	33	34	35	36	37	38	39	40	41
1											
2											
3											
4											
5											
6											
7											
8											
9											
10											
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20											
21											
22											
23											
24											
25											
26											
27											
28											
29											
30											
31	1.000										
32	-0.343	1.000									
33	0.250	-0.541	1.000								
34	0.126	-0.433	0.495	1.000							
35	-0.151	0.025	-0.092	0.071	1.000						
36	-0.184	0.438	-0.464	-0.400	0.038	1.000					
37	-0.017	-0.039	0.026	0.010	0.073	0.050	1.000				
38	0.448	-0.396	0.395	0.279	-0.183	-0.284	0.008	1.000			
39	0.261	-0.468	0.315	0.387	-0.036	-0.240	-0.041	0.285	1.000		
40	-0.168	0.436	-0.315	-0.328	-0.139	0.254	-0.049	-0.205	-0.387	1.000	
41	0.129	-0.112	0.215	0.169	-0.176	-0.131	-0.094	0.251	0.122	-0.007	1.000
M	3.269	5.088	3.351	3.757	4.348	4.604	3.840	2.857	3.792	4.818	3.255
Sd	1.402	1.564	1.442	1.242	1.581	1.710	1.745	1.371	1.943	1.691	1.799

Table 43

Intercorrelations among Scales - Subgroup 2

No.	Scale	1	2	3	4	5	6	7	8
1	uncreative-creative	1.000							
2	taking-giving	0.285	1.000						
3	unnecessary-necessary	0.133	0.097	1.000					
4	perfect-imperfect	-0.376	-0.209	-0.416	1.000				
5	unreliable-reliable	0.127	0.205	0.369	-0.431	1.000			
6	skilled-unskilled	-0.358	-0.110	-0.433	0.402	-0.303	1.000		
7	sociable-unsociable	-0.236	-0.241	-0.152	0.311	-0.251	0.133	1.000	
8	poorly paid-well paid	0.303	0.188	0.311	-0.357	0.283	-0.387	-0.222	1.000
9	dangerous-safe	0.115	0.178	-0.063	-0.131	0.090	-0.005	-0.234	0.130
10	successful-unsuccessful	-0.394	-0.184	-0.354	0.473	-0.336	0.442	0.329	-0.509
11	rough-smooth	0.104	0.115	-0.092	-0.161	0.094	0.039	-0.192	0.138
12	powerful-powerless	-0.168	-0.059	-0.345	0.273	-0.255	0.297	0.077	-0.237
13	new-old	-0.087	-0.081	0.021	0.116	-0.095	0.053	0.149	-0.210
14	meaningless-meaningful	0.262	0.130	0.510	-0.386	0.377	-0.399	-0.185	0.363
15	interesting-uninteresting	-0.441	-0.212	-0.296	0.426	-0.262	0.375	0.271	-0.352
16	boring-enjoyable	0.428	0.197	0.246	-0.395	0.205	-0.341	-0.306	0.340
17	good-bad	-0.385	-0.225	-0.437	0.450	-0.307	0.385	0.281	-0.388
18	unimportant-important	0.190	0.109	0.693	-0.412	0.369	-0.396	-0.155	0.338
19	kind-cruel	-0.205	-0.279	-0.189	0.346	-0.299	0.223	0.439	-0.275
20	nice-awful	-0.286	-0.262	-0.273	0.411	-0.329	0.244	0.357	-0.290
21	serving-receiving	-0.102	-0.385	-0.140	0.168	-0.270	0.076	0.181	-0.116
22	weak-strong	0.152	0.035	0.331	-0.233	0.200	-0.304	-0.019	0.232
23	unstable-stable	0.234	0.151	0.402	-0.396	0.418	-0.333	-0.240	0.366
24	dark-bright	0.336	0.236	0.207	-0.407	0.262	-0.314	-0.358	0.309
25	easy-difficult	0.083	0.012	0.241	-0.050	0.044	-0.316	0.144	0.154
26	sad-happy	0.324	0.247	0.161	-0.358	0.224	-0.254	-0.334	0.294
27	feminine-masculine	-0.011	-0.204	0.159	0.022	-0.002	-0.183	0.224	-0.011
28	unpleasant-pleasant	0.398	0.243	0.189	-0.376	0.273	-0.278	-0.343	0.336
29	rich-poor	-0.376	-0.179	-0.246	0.392	-0.241	0.376	0.193	-0.666
30	simple-complex	0.294	0.106	0.279	-0.250	0.113	-0.463	0.000	0.348
31	unselfish-selfish	-0.034	-0.189	-0.097	0.196	-0.237	0.061	0.206	-0.082
32	worthless-valuable	0.268	0.148	0.540	-0.405	0.348	-0.449	-0.144	0.342
33	secure-insecure	-0.264	-0.169	-0.326	0.350	-0.376	0.305	0.278	-0.371
34	superior-inferior	-0.253	-0.123	-0.295	0.344	-0.287	0.337	0.167	-0.403
35	tense-relaxed	0.054	0.060	-0.066	-0.054	0.085	0.098	-0.149	-0.005
36	temporary-permanent	0.153	0.133	0.325	-0.236	0.194	-0.261	-0.058	0.316
37	dependent-independent	0.023	0.043	-0.035	0.014	-0.032	-0.011	0.119	0.035
38	honest-dishonest	-0.171	-0.195	-0.248	0.325	-0.311	0.248	0.232	-0.207
39	exciting-dull	-0.398	-0.221	-0.197	0.345	-0.195	0.319	0.240	-0.301
40	undemanding-demanding	0.239	0.149	0.329	-0.272	0.211	-0.342	-0.211	0.250
41	clean-dirty	-0.164	-0.210	-0.013	0.205	-0.180	0.056	0.316	-0.249
	Mean	4.528	4.930	5.417	3.733	5.009	2.504	2.304	4.833
	Standard Deviation	2.105	1.794	1.727	1.481	1.634	1.809	1.596	1.625

Table 43 (Continued)

No.	9	10	11	12	13	14	15	16	17	18	19
1											
2											
3											
4											
5											
6											
7											
8											
9	1.000										
10	-0.116	1.000									
11	0.547	-0.174	1.000								
12	0.183	0.369	0.147	1.000							
13	-0.072	0.115	-0.182	0.092	1.000						
14	0.006	-0.473	0.027	-0.320	-0.013	1.000					
15	0.013	0.489	-0.048	0.368	0.125	-0.513	1.000				
16	-0.023	-0.466	0.060	-0.353	-0.126	0.422	-0.765	1.000			
17	-0.046	0.480	-0.061	0.335	0.082	-0.585	0.639	-0.650	1.000		
18	-0.045	-0.452	-0.073	-0.402	0.043	0.596	-0.454	0.401	-0.556	1.000	
19	-0.237	0.296	-0.226	0.033	0.114	-0.282	0.365	-0.300	0.394	-0.264	1.000
20	-0.187	0.346	-0.230	0.199	0.126	-0.367	0.458	-0.480	0.572	-0.358	0.678
21	-0.087	0.121	-0.083	0.041	0.064	-0.140	0.156	-0.091	0.145	-0.141	0.328
22	-0.190	-0.259	-0.221	-0.502	0.016	0.338	-0.325	0.363	-0.381	0.432	-0.091
23	0.049	-0.380	0.044	-0.342	-0.048	0.430	-0.395	0.362	-0.494	0.436	-0.351
24	0.153	-0.437	0.224	-0.214	-0.141	0.385	-0.469	0.467	-0.465	0.304	-0.415
25	-0.280	-0.116	-0.331	-0.185	0.109	0.201	-0.144	0.128	-0.130	0.205	0.072
26	0.212	-0.400	0.249	-0.139	-0.172	0.318	-0.445	0.484	-0.485	0.266	-0.435
27	-0.330	0.018	-0.312	-0.215	0.039	0.095	-0.028	0.029	0.025	0.163	0.283
28	0.184	-0.435	0.204	-0.258	-0.134	0.346	-0.533	0.561	-0.483	0.318	-0.410
29	-0.114	0.572	-0.181	0.298	0.171	-0.362	0.431	-0.418	0.413	-0.324	0.273
30	-0.144	-0.351	-0.131	-0.285	-0.021	0.357	-0.336	0.290	-0.281	0.296	-0.081
31	0.017	0.162	-0.050	0.139	0.052	-0.144	0.124	-0.112	0.167	-0.102	0.162
32	-0.068	-0.501	-0.028	-0.368	0.040	0.654	-0.419	0.413	-0.559	0.647	-0.246
33	-0.050	0.433	-0.090	0.248	0.074	-0.361	0.319	-0.309	0.384	-0.346	0.306
34	0.017	0.387	0.024	0.394	0.089	-0.334	0.363	-0.347	0.414	-0.323	0.175
35	0.314	-0.059	0.370	0.120	-0.055	0.046	-0.047	0.072	-0.102	-0.041	-0.188
36	0.043	-0.287	0.034	-0.178	0.026	0.278	-0.207	0.189	-0.283	0.289	-0.138
37	0.055	0.008	-0.004	0.039	0.038	-0.022	0.093	0.011	0.009	0.007	0.016
38	-0.101	0.302	-0.092	0.210	0.101	-0.297	0.293	-0.251	0.321	-0.266	0.350
39	0.086	0.437	-0.010	0.347	0.199	-0.395	0.689	-0.712	0.535	-0.321	0.316
40	-0.002	-0.312	-0.081	-0.293	-0.006	0.370	-0.278	0.246	-0.344	0.416	-0.191
41	-0.384	0.221	-0.370	-0.059	0.175	-0.142	0.214	-0.197	0.232	-0.062	0.415
M	4.818	3.104	4.117	3.727	4.525	5.020	3.156	4.235	3.020	5.211	2.887
Sd	1.919	1.610	1.774	1.581	1.922	1.647	1.991	2.001	1.775	1.712	1.481

Table 43 (Continued)

No.	20	21	22	23	24	25	26	27	28	29	30
1											
2											
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17											
18											
19											
20	1.000										
21	0.289	1.000									
22	-0.221	-0.010	1.000								
23	-0.389	-0.166	0.379	1.000							
24	-0.479	-0.188	0.216	0.360	1.000						
25	0.076	0.018	0.202	0.079	-0.048	1.000					
26	-0.558	-0.177	0.213	0.332	0.594	-0.143	1.000				
27	0.223	0.145	0.260	0.028	-0.163	0.229	-0.194	1.000			
28	-0.574	-0.132	0.219	0.400	0.548	-0.099	0.639	-0.133	1.000		
29	0.303	0.099	-0.217	-0.375	-0.400	-0.120	-0.365	-0.025	-0.410	1.000	
30	-0.104	-0.066	0.222	0.209	0.195	0.510	0.077	0.220	0.149	-0.416	1.000
31	0.148	0.181	-0.071	-0.132	-0.126	-0.057	-0.153	0.092	-0.108	0.051	-0.006
32	-0.370	-0.147	0.402	0.419	0.384	0.229	0.325	0.158	0.340	-0.425	0.379
33	0.324	0.145	-0.249	-0.439	-0.293	-0.049	-0.281	0.001	-0.304	0.365	-0.255
34	0.276	0.127	-0.362	-0.386	-0.292	-0.173	-0.303	-0.105	-0.338	0.453	-0.321
35	-0.176	-0.006	-0.124	0.074	0.157	-0.268	0.227	-0.237	0.205	-0.033	-0.205
36	-0.192	-0.133	0.222	0.367	0.133	0.154	0.119	0.091	0.183	-0.332	0.301
37	-0.022	0.051	0.024	-0.059	0.027	-0.019	0.006	0.009	-0.014	-0.039	0.067
38	0.349	0.272	-0.167	-0.354	-0.312	0.070	-0.406	0.082	-0.379	0.278	-0.077
39	0.379	0.124	-0.326	-0.312	-0.416	-0.165	-0.401	-0.018	-0.486	0.403	-0.301
40	-0.287	-0.113	0.285	0.349	0.255	0.210	0.196	0.097	0.267	-0.250	0.353
41	0.393	0.211	0.061	-0.205	-0.373	0.193	-0.350	0.450	-0.367	0.271	0.041
M	3.015	2.476	4.429	4.898	4.618	4.450	4.725	4.131	4.618	3.551	4.496
Sd	1.593	1.461	1.584	1.651	1.556	1.870	1.395	1.885	1.627	1.431	1.790

Table 43 (Continued)

No.	31	32	33	34	35	36	37	38	39	40	41
1											
2											
3											
4											
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6											
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21											
22											
23											
24											
25											
26											
27											
28											
29											
30											
31	1.000										
32	-0.158	1.000									
33	0.184	-0.462	1.000								
34	0.129	-0.450	0.430	1.000							
35	-0.088	-0.023	-0.109	0.028	1.000						
36	-0.098	0.339	-0.370	-0.297	0.005	1.000					
37	0.068	0.033	0.007	0.002	0.099	0.027	1.000				
38	0.290	-0.291	0.310	0.338	-0.087	-0.164	0.086	1.000			
39	0.094	-0.384	0.291	0.402	-0.042	-0.167	0.044	0.260	1.000		
40	-0.062	0.419	-0.259	-0.332	-0.072	0.182	-0.085	-0.179	-0.278	1.000	
41	0.100	-0.085	0.223	0.142	-0.229	-0.092	-0.010	0.283	0.175	-0.082	1.000
M	3.224	4.924	3.310	3.698	4.156	4.603	3.716	2.809	3.817	4.859	3.339
Sd	1.455	1.598	1.521	1.390	1.732	1.830	1.753	1.403	1.977	1.644	2.007

Table 44

Intercorrelations among Selected Scales - Combined Group

No.	Scale	1	2	3	4	5	6
1	uncreative-creative	1.000					
2	unnecessary-necessary	0.111	1.000				
3	poorly paid-well paid	0.309	0.273	1.000			
4	dangerous-safe	0.130	-0.105	0.063	1.000		
5	successful-unsuccessful	-0.431	-0.301	-0.511	-0.085	1.000	
6	rough-smooth	0.127	-0.110	0.131	0.492	-0.168	1.000
7	powerful-powerless	-0.162	-0.310	-0.307	0.220	0.395	0.139
8	meaningless-meaningful	0.272	0.504	0.351	-0.007	-0.440	0.029
9	interesting-uninteresting	-0.483	-0.267	-0.374	0.027	0.488	-0.062
10	boring-enjoyable	0.469	0.248	0.369	-0.014	-0.481	0.060
11	good-bad	-0.392	-0.399	-0.395	-0.012	0.478	-0.064
12	unimportant-important	0.178	0.661	0.322	-0.083	-0.407	-0.050
13	kind-cruel	-0.229	-0.208	-0.222	-0.182	0.306	-0.208
14	nice-awful	-0.310	-0.278	-0.288	-0.142	0.374	-0.214
15	weak-strong	0.136	0.344	0.230	-0.204	-0.203	-0.219
16	sad-happy	0.358	0.177	0.267	0.189	-0.408	0.221
17	unpleasant-pleasant	0.422	0.199	0.343	0.152	-0.460	0.200
18	rich-poor	-0.355	-0.215	-0.668	-0.067	0.552	-0.170
19	simple-complex	0.299	0.239	0.364	-0.143	-0.356	-0.093
20	worthless-valuable	0.261	0.536	0.368	-0.079	-0.453	-0.005
21	secure-insecure	-0.228	-0.318	-0.364	-0.042	0.429	-0.095
22	exciting-dull	-0.422	-0.230	-0.326	0.095	0.459	0.012
	M	4.580	5.414	4.834	4.958	3.090	4.101
	Sd	2.128	1.723	1.655	1.903	1.620	1.763

Table 44 (Continued)

Scale No.	7	8	9	10	11	12	13	14
1								
2								
3								
4								
5								
6								
7	1.000							
8	-0.329	1.000						
9	0.373	-0.470	1.000					
10	-0.351	0.423	-0.800	1.000				
11	0.355	-0.546	0.650	-0.663	1.000			
12	-0.388	0.597	-0.451	0.427	-0.561	1.000		
13	0.096	-0.307	0.366	-0.311	0.420	-0.312	1.000	
14	0.228	-0.384	0.483	-0.475	0.592	-0.397	0.681	1.000
15	-0.519	0.348	-0.336	0.356	-0.373	0.438	-0.158	-0.265
16	-0.201	0.335	-0.456	0.486	-0.478	0.290	-0.423	-0.508
17	-0.275	0.362	-0.569	0.593	-0.545	0.377	-0.412	-0.552
18	0.344	-0.361	0.432	-0.408	0.412	-0.337	0.268	0.320
19	-0.290	0.321	-0.358	0.303	-0.307	0.294	-0.122	-0.186
20	-0.367	0.627	-0.440	0.430	-0.565	0.668	-0.307	-0.414
21	0.308	-0.365	0.327	-0.330	0.409	-0.389	0.321	0.365
22	0.362	-0.401	0.694	-0.708	0.571	-0.365	0.314	0.421
M	3.685	5.005	3.179	4.320	2.957	5.246	2.932	3.006
Sd	1.621	1.673	2.032	2.045	1.765	1.746	1.395	1.531

Table 44 (Continued)

Scale No.	15	16	17	18	19	20	21	22
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15	1.000							
16	0.254	1.000						
17	0.274	0.621	1.000					
18	-0.255	-0.354	-0.439	1.000				
19	0.243	0.153	0.206	-0.419	1.000			
20	0.422	0.346	0.416	-0.422	0.398	1.000		
21	-0.319	-0.346	-0.361	0.395	-0.268	-0.499	1.000	
22	-0.348	-0.408	-0.516	0.398	-0.330	-0.425	0.303	1.000
M	4.497	4.699	4.625	3.548	4.536	5.007	3.330	3.804
Sd	1.854	1.370	1.630	1.415	1.746	1.583	1.482	1.960

Table 45

Varimax Rotated Factors of All Scales - Subgroup 1

No.	Scale	I	II	III	IV	V	VI	$\underline{h}^2_j$
1	uncreative-creative	-0.597	0.099	-0.072	0.063	-0.262	0.265	0.515
2	taking-giving	-0.240	-0.101	-0.336	0.265	-0.071	0.142	0.277
3	unnecessary-necessary	-0.099	0.210	-0.149	0.746	0.176	0.035	0.665
4	perfect-imperfect	0.256	-0.301	0.102	-0.404	0.092	-0.085	0.346
5	unreliable-reliable	-0.147	0.359	-0.249	0.474	-0.087	0.014	0.445
6	skilled-unskilled	0.443	-0.279	0.068	-0.201	0.129	-0.389	0.487
7	sociable-unsociable	0.187	-0.259	0.302	-0.006	0.062	-0.053	0.200
8	poorly paid-well paid	-0.325	0.544	0.116	0.161	-0.124	0.229	0.509
9	dangerous-safe	-0.010	-0.048	-0.166	-0.071	-0.596	-0.127	0.406
10	successful-unsuccessful	0.474	-0.487	0.034	-0.153	0.153	-0.180	0.542
11	rough-smooth	-0.097	0.127	-0.039	-0.054	-0.658	-0.156	0.487
12	powerful-powerless	0.261	-0.557	0.037	-0.081	-0.337	-0.062	0.505
13	new-old	0.182	-0.266	-0.077	0.056	-0.068	-0.057	0.121
14	meaningless-meaningful	-0.325	0.302	-0.234	0.497	0.050	0.076	0.507
15	interesting-uninteresting	0.815	-0.203	0.189	-0.096	-0.086	-0.127	0.774
16	boring-enjoyable	-0.810	0.195	-0.189	0.117	0.055	0.070	0.751
17	good-bad	0.621	-0.309	0.297	-0.286	-0.049	-0.036	0.655
18	unimportant-important	-0.289	0.340	-0.265	0.572	0.194	-0.007	0.634
19	kind-cruel	0.307	-0.214	0.516	-0.138	0.163	0.079	0.459
20	nice-awful	0.454	-0.282	0.448	-0.175	0.117	0.030	0.531
21	serving-receiving	0.105	0.025	0.563	-0.222	0.033	-0.016	0.381
22	weak-strong	-0.214	0.465	-0.232	0.167	0.425	-0.053	0.527
23	unstable-stable	-0.178	0.559	-0.277	0.266	0.033	-0.024	0.493
24	dark-bright	-0.443	0.329	-0.198	0.146	-0.145	-0.057	0.389

Table 45 (Continued)

No.	Scale	I	II	III	IV	V	VI	$\underline{h}^2_j$
25	easy-difficult	-0.080	0.092	-0.104	0.077	0.302	0.637	0.529
26	sad-happy	-0.471	0.336	-0.338	0.048	-0.144	-0.101	0.481
27	feminine-masculine	-0.049	0.252	-0.068	0.108	0.487	-0.090	0.327
28	unpleasant-pleasant	-0.650	0.345	-0.256	0.098	-0.109	-0.118	0.642
29	rich-poor	0.351	-0.623	-0.024	-0.089	0.162	-0.191	0.583
30	simple-complex	-0.244	0.381	-0.071	0.059	0.107	0.599	0.583
31	unselfish-selfish	0.099	-0.016	0.643	-0.083	0.013	-0.097	0.440
32	worthless-valuable	-0.297	0.414	-0.343	0.471	0.123	0.139	0.633
33	secure-insecure	0.147	-0.629	0.318	-0.192	0.033	0.012	0.556
34	superior-inferior	0.227	-0.582	0.104	-0.137	-0.100	-0.162	0.456
35	tense-relaxed	-0.112	-0.078	-0.164	0.163	-0.392	-0.283	0.306
36	temporary-permanent	-0.065	0.480	-0.208	0.260	-0.016	0.155	0.369
37	dependent-independent	-0.055	0.036	0.031	-0.088	-0.048	-0.004	0.015
38	honest-dishonest	0.117	-0.236	0.596	-0.191	0.081	0.020	0.468
39	exciting-dull	0.702	-0.236	0.206	-0.080	-0.169	-0.136	0.645
40	undemanding-demanding	-0.238	0.284	-0.221	0.171	0.262	0.210	0.328
41	clean-dirty	0.114	-0.253	0.171	0.031	0.504	-0.027	0.361
	Total Variance	12.847%	11.565%	7.289%	6.155%	5.662%	3.623%	47.140%
	Common Variance	27.252%	24.532%	15.463%	13.056%	12.010%	7.686%	

Table 46

Varimax Rotated Factors of Selected Twenty-Nine Scales - Subgroup 1

No.	Scale	I	II	III	IV	V	$\underline{h}_j^2$
1	uncreative - creative	-0.618	-0.067	0.202	0.061	0.161	0.457
2	unnecessary - necessary	-0.041	-0.261	0.152	0.705	-0.204	0.631
3	unreliable - reliable	-0.096	-0.346	0.332	0.403	0.058	0.405
4	skilled-- unskilled	0.489	0.062	-0.343	-0.232	0.003	0.415
5	poorly paid - well paid	-0.348	0.024	0.595	0.202	0.057	0.520
6	dangerous - safe	-0.018	-0.123	-0.043	-0.064	0.626	0.413
7	successful - unsuccessful	0.463	0.155	-0.525	-0.160	-0.068	0.544
8	rough - smooth	-0.090	-0.094	0.124	-0.041	0.654	0.462
9	powerful - powerless	0.187	0.216	-0.513	-0.068	0.395	0.505
10	meaningless - meaningful	-0.288	-0.333	0.243	0.500	-0.068	0.507
11	interesting - uninteresting	0.786	0.310	-0.186	-0.093	0.120	0.771
12	boring - enjoyable	-0.769	-0.334	0.167	0.091	-0.101	0.750
13	good - bad	0.561	0.458	-0.231	-0.266	0.065	0.652
14	unimportant - important	-0.210	-0.427	0.241	0.576	-0.191	0.653
15	kind - cruel	0.244	0.572	-0.116	-0.143	-0.175	0.451
16	nice - awful	0.390	0.560	-0.197	-0.167	-0.113	0.546
17	weak -strong	-0.113	-0.413	0.365	0.101	-0.448	0.528
18	unstable - stable	-0.103	-0.441	0.485	0.233	-0.049	0.497
19	easy - difficult	-0.219	0.080	0.144	0.209	-0.346	0.238
20	sad - happy	-0.389	-0.478	0.266	0.013	0.143	0.471

Table 46 (Continued)

No.	Scale	I	II	III	IV	V	$\underline{h}^2_j$
21	unpleasant - pleasant	-0.543	-0.456	0.296	0.050	0.119	0.608
22	rich - poor	0.353	0.080	-0.662	-0.123	-0.075	0.590
23	simple - complex	-0.368	0.011	0.375	0.218	-0.195	0.362
24	unselfish - selfish	0.135	0.478	0.079	-0.172	-0.017	0.282
25	worthless - valuable	-0.276	-0.414	0.332	0.520	-0.138	0.647
26	secure - insecure	0.091	0.468	-0.537	-0.174	0.001	0.547
27	superior - inferior	0.222	0.220	-0.531	-0.159	0.179	0.437
28	honest - dishonest	0.094	0.579	-0.126	-0.198	-0.053	0.402
29	exciting - dull	0.679	0.303	-0.182	-0.112	0.215	0.645
	Total Variance	14.735%	12.252%	11.551%	7.212%	5.754%	51.504%
	Common Variance	28.609%	23.788%	22.428%	14.002%	11.172%	

Table 47

Varimax Rotated Factors of All Scales - Subgroup 2

No.	Scale	I	II	III	IV	V	VI	h_j^2
1	uncreative-creative	0.133	-0.458	0.109	-0.063	-0.184	0.315	0.377
2	taking-giving	0.037	-0.174	0.140	-0.493	-0.046	0.227	0.348
3	unnecessary-necessary	0.758	-0.056	-0.086	-0.090	0.084	0.095	0.609
4	perfect-imperfect	-0.458	0.301	-0.146	0.201	0.182	-0.104	0.406
5	unreliable-reliable	0.475	-0.070	0.083	-0.325	-0.153	-0.044	0.368
6	skilled-unskilled	-0.475	0.239	0.070	0.035	0.162	-0.345	0.435
7	sociable-unsociable	-0.142	0.277	-0.282	0.332	0.106	0.031	0.298
8	poorly paid-well paid	0.381	-0.192	0.161	-0.052	-0.488	0.316	0.549
9	dangerous-safe	0.012	0.023	0.701	-0.046	-0.061	0.036	0.499
10	successful-unsuccessful	-0.472	0.371	-0.151	0.057	0.332	-0.213	0.542
11	rough-smooth	-0.020	-0.064	0.708	0.011	-0.150	-0.033	0.529
12	powerful-powerless	-0.411	0.265	0.341	0.032	0.278	0.067	0.438
13	new-old	0.001	0.154	-0.106	0.096	0.299	0.029	0.141
14	meaningless-meaningful	0.657	-0.339	0.022	-0.052	0.036	0.140	0.570
15	interesting-uninteresting	-0.303	0.748	0.041	0.109	0.098	-0.135	0.693
16	boring-enjoyable	0.242	-0.816	-0.040	-0.034	-0.115	0.082	0.747
17	good-bad	-0.522	0.594	-0.063	0.126	0.019	-0.065	0.650
18	unimportant-important	0.782	-0.254	-0.073	-0.040	0.115	0.056	0.699
19	kind-cruel	-0.235	0.341	-0.351	0.484	-0.020	-0.026	0.530
20	nice-awful	-0.333	0.506	-0.294	0.386	-0.023	0.056	0.606
21	serving-receiving	-0.102	0.020	-0.064	0.628	-0.003	-0.103	0.419
22	weak-strong	0.455	-0.286	-0.361	0.012	-0.155	-0.118	0.457
23	unstable-stable	0.557	-0.239	0.030	-0.212	-0.229	-0.064	0.469
24	dark-bright	0.272	-0.525	0.260	-0.196	-0.148	0.030	0.47[illegible]

Table 47 (Continued)

No.	Scale	I	II	III	IV	V	VI	$\underline{h}_j^2$
25	easy-difficult	0.206	-0.017	-0.432	0.022	0.055	0.512	0.495
26	sad-happy	0.215	-0.569	0.309	-0.215	-0.163	-0.110	0.551
27	feminine-masculine	0.211	0.065	-0.496	0.304	-0.069	0.038	0.394
28	unpleasant-pleasant	0.247	-0.623	0.248	-0.170	-0.206	-0.067	0.587
29	rich-poor	-0.349	0.312	-0.165	-0.013	0.554	-0.319	0.656
30	simple-complex	0.313	-0.186	-0.230	0.028	-0.175	0.623	0.605
31	unselfish-selfish	-0.147	0.051	-0.006	0.309	0.079	0.072	0.131
32	worthless-valuable	0.715	-0.283	-0.064	-0.056	-0.043	0.143	0.620
33	secure-insecure	-0.475	0.159	-0.088	0.199	0.307	-0.039	0.394
34	superior-inferior	-0.411	0.245	0.125	0.137	0.450	-0.054	0.469
35	tense-relaxed	0.009	-0.121	0.478	0.018	0.006	-0.212	0.288
36	temporary-permanent	0.422	-0.013	0.016	-0.071	-0.217	0.179	0.263
37	dependent-independent	0.004	0.013	0.077	0.115	0.009	0.071	0.024
38	honest-dishonest	-0.309	0.208	-0.093	0.381	0.217	0.134	0.358
39	exciting-dull	-0.169	0.729	0.125	0.120	0.194	-0.121	0.641
40	undemanding-demanding	0.417	-0.205	-0.097	-0.151	-0.049	0.189	0.286
41	clean-dirty	-0.045	0.219	-0.524	0.304	0.160	-0.001	0.442
	Total Variance	14.317%	12.163%	7.285%	4.983%	4.132%	3.616%	46.495%
	Common Variance	30.793%	26.160%	15.667%	10.717%	8.886%	7.777%	

Table 48

Varimax Rotated Factors of Selected Twenty-Eight Scales - Subgroup 2

No.	Scale	I	II	III	IV	V	VI	$\underline{h}^2_j$
1	unnecessary-necessary	-0.035	0.752	-0.129	-0.065	-0.111	0.152	0.623
2	perfect-imperfect	0.290	-0.362	0.299	-0.145	0.223	-0.095	0.384
3	skilled-unskilled	0.204	-0.373	0.308	0.013	0.099	-0.360	0.416
4	poorly paid-well paid	-0.171	0.244	-0.561	0.225	-0.092	0.261	0.531
5	dangerous-safe	0.008	0.001	-0.030	0.677	-0.102	-0.104	0.481
6	successful-unsuccessful	0.361	-0.339	0.457	-0.190	0.069	-0.206	0.537
7	rough-smooth	-0.097	-0.042	-0.048	0.701	-0.056	-0.107	0.520
8	powerful-powerless	0.252	-0.327	0.411	0.321	-0.034	0.016	0.444
9	meaningless-meaningful	-0.330	0.628	-0.130	0.059	-0.084	0.220	0.579
10	interesting-uninteresting	0.744	-0.246	0.177	0.031	0.134	-0.196	0.703
11	boring-enjoyable	-0.820	0.219	-0.160	-0.022	-0.024	0.134	0.764
12	good-bad	0.574	-0.470	0.189	-0.022	0.209	-0.085	0.638
13	unimportant-important	-0.223	0.790	-0.129	-0.055	-0.085	0.104	0.712
14	kind-cruel	0.317	-0.155	0.080	-0.242	0.619	0.002	0.572
15	nice-awful	0.475	-0.264	0.117	-0.183	0.545	0.099	0.650
16	serving-receiving	0.032	-0.069	0.042	-0.029	0.553	-0.044	0.316
17	weak-strong	-0.260	0.419	-0.302	-0.340	0.029	-0.070	0.455
18	unstable-stable	-0,256	0.450	-0.337	0.017	-0.216	-0.039	0.430
19	dark-bright	-0.497	0.244	-0.222	0.257	-0.223	-0.001	0.472
20	easy-difficult	0.011	0.180	-0.070	-0.343	0.048	0.574	0.488

Table 48 (Continued)

No.	Scale	I	II	III	IV	V	VI	$\underline{h}^2_j$
21	sad-happy	-0.547	0.204	-0.194	0.292	-0.231	-0.137	0.535
22	unpleasant-pleasant	-0.609	0.203	-0.256	0.236	-0.188	-0.104	0.579
23	rich-poor	0.286	-0.145	0.662	-0.217	0.080	-0.267	0.665
24	simple-complex	-0.151	0.217	-0.286	-0.122	-0.010	0.647	0.585
25	worthless-valuable	-0.270	0.663	-0.239	-0.026	-0.083	0.190	0.613
26	superior-inferior	0.251	-0.231	0.539	0.112	0.133	-0.075	0.443
27	exciting-dull	0.722	-0.100	0.233	0.124	0.110	-0.174	0.643
28	clean-dirty	0.229	0.030	0.155	-0.453	0.362	0.079	0.420
	Total Variance	15.231%	13.175%	8.397%	7.153%	5.445%	4.868%	54.269%
	Common Variance	28.066%	24.278%	15.473%	13.180%	10.033%	8.970%	

APPENDIX B

STATISTICS FROM PHASE 2

Table 49

Intercorrelations among Eighteen Scales - Total Group

No.	Scale	1	2	3	4	5
1	boring-enjoyable	1.000				
2	uninteresting-interesting	0.841	1.000			
3	dull-exciting	0.811	0.854	1.000		
4	unpleasant-pleasant	0.762	0.754	0.764	1.000	
5	uncreative-creative	0.532	0.559	0.568	0.575	1.000
6	unimportant-important	0.414	0.449	0.430	0.397	0.345
7	unnecessary-necessary	0.366	0.390	0.386	0.357	0.318
8	worthless-valuable	0.404	0.440	0.424	0.381	0.347
9	meaningless-meaningful	0.418	0.438	0.442	0.415	0.357
10	poor-rich	0.401	0.408	0.410	0.402	0.372
11	poorly paid-well paid	0.376	0.396	0.385	0.372	0.342
12	simple-complex	0.310	0.336	0.332	0.276	0.328
13	cruel-kind	0.178	0.183	0.167	0.256	0.154
14	awful-nice	0.379	0.367	0.362	0.420	0.310
15	dangerous-safe	-0.178	-0.202	-0.231	-0.080	-0.049
16	rough-smooth	-0.111	-0.142	-0.149	-0.015	-0.006
17	powerless-powerful	0.396	0.417	0.428	0.321	0.269
18	weak-strong	0.422	0.440	0.448	0.360	0.270
	Mean	4.218	4.467	4.268	4.258	4.520
	Standard Deviation	2.078	2.132	2.068	1.941	1.888

Table 49 (Continued)

Scale No.	6	7	8	9	10	11	12
1							
2							
3							
4							
5							
6	1.000						
7	0.779	1.000					
8	0.692	0.761	1.000				
9	0.630	0.646	0.721	1.000			
10	0.401	0.359	0.430	0.426	1.000		
11	0.373	0.335	0.404	0.387	0.816	1.000	
12	0.355	0.324	0.370	0.366	0.442	0.443	1.000
13	0.150	0.143	0.166	0.185	0.245	0.246	0.033
14	0.251	0.249	0.299	0.299	0.342	0.320	0.129
15	-0.170	-0.153	-0.149	-0.158	-0.106	-0.086	-0.223
16	-0.164	-0.133	-0.105	-0.097	-0.039	-0.042	-0.204
17	0.373	0.352	0.378	0.369	0.333	0.317	0.321
18	0.414	0.394	0.407	0.398	0.330	0.298	0.311
M	5.219	5.246	5.164	5.025	4.864	4.994	4.507
Sd	1.817	1.786	1.678	1.760	1.561	1.575	1.962

Table 49 (Continued)

Scale No.	13	14	15	16	17	18
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13	1.000					
14	0.557	1.000				
15	0.185	0.075	1.000			
16	0.234	0.162	0.550	1.000		
17	0.046	0.218	-0.348	-0.299	1.000	
18	0.057	0.204	-0.373	-0.345	0.736	1.000
M	4.729	4.695	4.652	4.157	4.390	4.474
Sd	1.496	1.602	2.033	1.909	1.813	1.739

Table 50.

Intercorrelations among Occupations - Male Group

No.	Occupation	1	2	3	4	5	6	7	8
1	Airplane Pilot	1.000							
2	Cattle Inspector	0.067	1.000						
3	Cook	-0.058	0.160	1.000					
4	Telephone Operator	-0.130	0.357	0.443	1.000				
5	Salesman	-0.111	0.214	0.277	0.411	1.000			
6	Lawyer	0.440	0.127	0.046	0.055	0.030	1.000		
7	Reporter	0.321	0.215	0.325	0.232	0.280	0.285	1.000	
8	Cartoonist	-0.194	-0.008	0.378	0.152	0.315	-0.066	0.210	1.000
9	Optometrist	0.129	0.287	0.326	0.458	0.272	0.294	0.245	0.145
10	Fisherman	0.239	0.247	0.221	0.162	0.042	0.151	0.307	0.013
11	Secretary	-0.160	0.193	0.476	0.563	0.484	0.050	0.304	0.333
12	Bus Driver	0.112	0.201	0.271	0.299	0.237	0.157	0.244	0.026
13	Service Station Attendant	0.031	0.369	0.362	0.373	0.355	-0.010	0.333	0.172
14	Tailor	-0.187	0.252	0.477	0.530	0.407	0.007	0.195	0.291
15	Eletronics Worker	0.561	0.099	0.042	-0.002	-0.028	0.422	0.285	-0.159
16	Mechanic	0.479	0.168	0.230	0.050	0.048	0.359	0.347	-0.075
17	Policeman	0.591	0.112	-0.082	-0.100	-0.133	0.319	0.242	-0.282
18	Soldier	0.471	0.192	-0.126	-0.136	-0.055	0.280	0.247	-0.307
19	Athletic Coach	0.125	0.153	0.154	0.151	0.153	0.079	0.250	0.147
20	Sports Announcer	-0.030	0.082	0.367	0.326	0.316	0.059	0.370	0.374
21	Chemist	0.460	0.201	0.114	-0.002	0.026	0.380	0.279	-0.029
22	Mailman	0.008	0.336	0.408	0.441	0.317	0.023	0.278	0.137
23	Librarian	-0.316	0.218	0.362	0.543	0.350	-0.209	0.091	0.275
24	Doctor	0.428	0.165	0.062	0.064	-0.003	0.510	0.180	-0.143
25	Astronomer	0.106	0.187	0.315	0.261	0.215	0.118	0.237	0.148
26	Dressmaker	-0.246	0.180	0.528	0.580	0.381	-0.084	0.151	0.318
27	Actor	0.335	-0.047	0.212	0.012	0.122	0.341	0.275	0.213
28	Nurse	0.215	0.275	0.342	0.373	0.218	0.279	0.290	0.060
29	Teacher	0.202	0.271	0.223	0.359	0.177	0.272	0.219	0.026
30	Dentist	0.296	0.228	0.249	0.296	0.189	0.488	0.212	0.022
	Mean	5.165	4.147	4.550	4.248	3.943	5.394	4.485	4.797
	Standard Deviation	1.502	1.437	1.453	1.606	1.499	1.478	1.398	1.538

Table 50 (Continued)

No.	9	10	11	12	13	14	15	16	17	18	19
1											
2											
3											
4											
5											
6											
7											
8											
9	1.000										
10	0.101	1.000									
11	0.508	0.061	1.000								
12	0.319	0.302	0.288	1.000							
13	0.232	0.304	0.388	0.437	1.000						
14	0.494	0.033	0.591	0.243	0.337	1.000					
15	0.221	0.191	-0.007	0.153	0.121	-0.025	1.000				
16	0.204	0.311	0.057	0.207	0.297	0.045	0.594	1.000			
17	0.102	0.335	-0.144	0.250	0.101	-0.209	0.434	0.394	1.000		
18	0.017	0.252	-0.163	0.184	0.109	-0.207	0.438	0.422	0.672	1.000	
19	0.121	0.316	0.147	0.250	0.198	0.059	0.067	0.135	0.279	0.215	1.000
20	0.232	0.045	0.444	0.111	0.199	0.345	0.024	0.129	-0.144	-0.044	0.269
21	0.375	0.176	0.065	0.197	0.094	0.117	0.464	0.353	0.343	0.355	0.093
22	0.328	0.231	0.466	0.439	0.493	0.423	0.147	0.214	0.119	0.149	0.171
23	0.274	0.029	0.501	0.184	0.279	0.529	-0.286	-0.181	-0.305	-0.334	0.070
24	0.398	0.103	0.121	0.124	0.068	0.073	0.447	0.320	0.451	0.310	0.098
25	0.329	0.105	0.300	0.107	0.195	0.281	0.117	0.036	-0.011	-0.035	0.130
26	0.426	0.020	0.650	0.175	0.266	0.651	-0.160	-0.057	-0.310	-0.328	0.017
27	0.156	0.061	0.141	0.057	-0.022	0.099	0.248	0.215	0.108	0.105	0.150
28	0.537	0.218	0.418	0.376	0.313	0.311	0.241	0.268	0.231	0.126	0.207
29	0.392	0.179	0.321	0.307	0.202	0.220	0.151	0.212	0.281	0.273	0.324
30	0.532	0.154	0.320	0.273	0.163	0.344	0.306	0.295	0.263	0.168	0.162
_M_	4.924	4.255	4.418	4.286	4.065	4.350	4.929	4.769	4.820	4.112	5.128
_Sd_	1.549	1.564	1.599	1.530	1.594	1.528	1.447	1.432	1.893	1.915	1.228

Table 50 (Continued)

No.	20	21	22	23	24	25	26	27	28	29	30
1											
2											
3											
4											
5											
6											
7											
8											
9											
10											
11											
12											
13											
14											
15											
16											
17											
18											
19											
20	1.000										
21	0.043	1.000									
22	0.233	0.052	1.000								
23	0.288	-0.096	0.340	1.000							
24	0.059	0.485	0.105	-0.144	1.000						
25	0.181	0.272	0.194	0.234	0.211	1.000					
26	0.335	-0.041	0.372	0.612	-0.046	0.248	1.000				
27	0.281	0.360	-0.037	-0.065	0.272	0.219	0.040	1.000			
28	0.241	0.362	0.347	0.152	0.429	0.289	0.337	0.217	1.000		
29	0.179	0.269	0.251	0.197	0.301	0.167	0.186	0.206	0.394	1.000	
30	0.247	0.360	0.268	0.105	0.541	0.256	0.250	0.262	0.541	0.389	1.000
M	4.806	4.616	4.098	3.776	5.526	4.778	4.030	5.142	4.875	4.887	5.113
Sd	1.426	1.461	1.609	1.093	1.455	1.445	1.785	1.367	1.462	1.502	1.512

Table 51

Intercorrelations among Occupations - Female Group

No.	Occupation	1	2	3	4	5	6	7	8
1	Airplane Pilot	1.000							
2	Cattle Inspector	0.163	1.000						
3	Cook	-0.051	0.155	1.000					
4	Telephone Operator	-0.030	0.170	0.516	1.000				
5	Salesman	-0.144	0.328	0.294	0.394	1.000			
6	Lawyer	0.524	0.076	0.049	-0.049	-0.045	1.000		
7	Reporter	0.316	0.193	0.378	0.267	0.162	0.373	1.000	
8	Cartoonist	-0.065	-0.111	0.204	0.194	0.104	-0.080	0.214	1.000
9	Optometrist	0.095	0.141	0.258	0.407	0.347	0.274	0.236	0.065
10	Fisherman	0.390	0.342	0.195	0.233	0.237	0.320	0.252	0.137
11	Secretary	-0.046	-0.013	0.368	0.570	0.476	0.024	0.279	0.211
12	Bus Driver	0.170	0.477	0.349	0.358	0.538	0.147	0.306	0.102
13	Service Station Attendant	-0.017	0.194	0.334	0.377	0.472	0.005	0.215	0.005
14	Tailor	-0.192	0.048	0.317	0.401	0.475	-0.007	0.049	0.219
15	Electronics Worker	0.534	0.184	0.041	0.087	-0.038	0.643	0.303	0.036
16	Mechanic	0.520	0.163	0.125	0.156	0.014	0.580	0.325	-0.007
17	Policeman	0.599	0.199	0.091	0.059	-0.074	0.567	0.342	-0.240
18	Soldier	0.484	0.210	-0.044	-0.046	-0.152	0.476	0.237	-0.196
19	Athletic Coach	0.275	0.083	0.157	0.018	0.260	0.347	0.338	0.026
20	Sports Announcer	-0.116	0.169	0.379	0.358	0.464	0.041	0.357	0.364
21	Chemist	0.560	0.260	0.159	0.117	0.021	0.550	0.319	-0.001
22	Mailman	-0.119	0.246	0.394	0.372	0.381	-0.160	0.190	0.137
23	Librarian	-0.314	0.199	0.309	0.425	0.488	-0.318	0.023	0.178
24	Doctor	0.668	0.193	0.040	0.044	-0.067	0.589	0.280	-0.050
25	Astronomer	0.366	0.268	0.071	0.073	0.044	0.210	0.254	-0.091
26	Dressmaker	-0.324	-0.038	0.303	0.382	0.431	-0.147	0.030	0.177
27	Actor	0.359	-0.190	0.149	0.101	0.025	0.344	0.303	0.166
28	Nurse	0.274	0.181	0.285	0.297	0.315	0.270	0.147	-0.008
29	Teacher	0.356	0.182	0.313	0.300	0.208	0.307	0.337	-0.072
30	Dentist	0.272	0.175	0.005	0.076	0.130	0.358	0.036	-0.119
	Mean	5.089	3.907	4.687	4.618	4.181	5.611	4.773	4.599
	Standard Deviation	1.599	1.474	1.567	1.479	1.560	1.322	1.390	1.578

Table 51 (Continued)

No.	9	10	11	12	13	14	15	16	17	18	19
1											
2											
3											
4											
5											
6											
7											
8											
9	1.000										
10	0.190	1.000									
11	0.528	0.303	1.000								
12	0.311	0.399	0.362	1.000							
13	0.356	0.274	0.422	0.465	1.000						
14	0.441	0.125	0.507	0.334	0.314	1.000					
15	0.326	0.334	0.014	0.284	0.087	-0.024	1.000				
16	0.407	0.297	0.124	0.282	0.177	0.009	0.674	1.000			
17	0.127	0.406	-0.058	0.205	0.020	-0.163	0.502	0.570	1.000		
18	-0.032	0.417	-0.136	0.209	0.013	-0.259	0.515	0.506	0.659	1.000	
19	0.244	0.325	0.181	0.286	0.139	0.053	0.227	0.318	0.327	0.206	1.000
20	0.340	0.230	0.449	0.468	0.379	0.335	0.048	0.055	-0.126	-0.111	0.334
21	0.321	0.411	-0.010	0.214	0.153	0.072	0.634	0.535	0.578	0.484	0.220
22	0.189	0.205	0.377	0.451	0.295	0.429	-0.137	0.066	-0.075	-0.053	0.022
23	0.194	0.151	0.450	0.447	0.300	0.456	-0.207	-0.227	-0.286	-0.182	0.107
24	0.322	0.395	-0.045	0.226	0.127	-0.123	0.588	0.615	0.612	0.498	0.198
25	0.267	0.338	0.062	0.292	0.149	-0.035	0.298	0.162	0.339	0.303	0.254
26	0.330	0.067	0.550	0.307	0.223	0.543	-0.098	-0.052	-0.199	-0.328	0.225
27	0.192	0.109	0.303	0.020	0.050	0.095	0.166	0.236	0.220	0.077	0.197
28	0.399	0.383	0.360	0.352	0.322	0.233	0.201	0.299	0.351	0.220	0.114
29	0.311	0.320	0.375	0.293	0.356	0.114	0.209	0.185	0.334	0.188	0.201
30	0.451	0.190	0.221	0.341	0.243	0.131	0.394	0.335	0.249	0.148	0.093
M	5.082	4.245	5.113	4.055	3.810	4.572	4.935	4.687	5.161	3.979	4.925
Sd	1.578	1.501	1.500	1.627	1.547	1.511	1.613	1.526	1.820	1.750	1.379

Table 51 (Continued)

No.	20	21	22	23	24	25	26	27	28	29	30
1											
2											
3											
4											
5											
6											
7											
8											
9											
10											
11											
12											
13											
14											
15											
16											
17											
18											
19											
20	1.000										
21	0.031	1.000									
22	0.297	-0.096	1.000								
23	0.489	-0.210	0.577	1.000							
24	-0.041	0.605	-0.084	-0.295	1.000						
25	0.099	0.476	-0.122	0.116	0.390	1.000					
26	0.394	-0.118	0.298	0.504	-0.256	0.084	1.000				
27	0.144	0.184	0.034	-0.059	0.391	0.186	0.121	1.000			
28	0.237	0.358	0.158	0.117	0.468	0.300	0.163	0.269	1.000		
29	0.219	0.277	0.047	0.095	0.359	0.278	0.115	0.325	0.486	1.000	
30	0.083	0.304	0.136	0.001	0.382	0.250	0.121	0.153	0.374	0.408	1.000
M	4.749	4.662	4.217	4.145	5.561	4.763	4.488	5.619	5.320	5.215	4.889
Sd	1.561	1.674	1.638	1.940	1.609	1.541	1.621	1.191	1.458	1.449	1.650

Table 52

A Transformed Female Component Matrix of Occupations

No.	Occupation	I	II	III	IV
1	Airplane Pilot	-.249	.694	.322	.049
2	Cattle Inspector	.214	.007	.679	-.348
3	Cook	.411	-.011	.308	.409
4	Telephone Operator	.589	.031	.202	.275
5	Salesman	.684	-.112	.292	.070
6	Lawyer	-.139	.745	.191	.174
7	Reporter	.025	.253	.473	.555
8	Cartoonist	.059	-.170	.056	.660
9	Optometrist	.613	.466	-.037	.132
10	Fisherman	.186	.311	.591	.081
11	Secretary	.725	.119	-.025	.391
12	Bus Driver	.542	.108	.617	-.005
13	S. S. Attendant*	.596	.112	.248	-.010
14	Tailor	.691	-.036	-.062	.212
15	Electronics Worker	-.080	.686	.317	.065
16	Mechanic	-.005	.679	.301	.131
17	Policeman	-.188	.666	.432	-.045
18	Soldier	-.296	.481	.545	-.139
19	Athletic Coach	.062	.239	.370	.354
20	Sports Announcer	.490	-.103	.312	.469
21	Chemist	-.029	.675	.379	.016
22	Mailman	.527	-.239	.334	.105
23	Librarian	.649	-.411	.266	.101
24	Doctor	-.081	.802	.264	-.013
25	Astronomer	.114	.403	.343	-.093
26	Dressmaker	.667	-.130	-.113	.282
27	Actor	.070	.482	-.168	.527
28	Nurse	.475	.509	.138	-.043
29	Teacher	.381	.496	.135	.064
30	Dentist	.417	.587	-.044	-.281

* Service Station Attendant.

Note 1 The largest value in the error matrix = 0.3604,
2 The average sum of squares for the error matrix = 0.0174 (see Skakun et al., 1976).

Table 53

A Comparison among Occupational Group Means

on Characteristic Factor I - Males

Analysis of Variance

Source of Variance	SS	df	MS	F	p
Between People	158.3242	67	2.3630		
Within People	159.3828	204	0.7813		
Groups	99.7383	3	33.2461	112.0382	0.0
Residual	59.6445	201	0.2967		
Total	317.7070	271			

Posterior Tests

Group (Means)	4 (5.140)	2 (4.823)	3 (4.234)	1 (3.552)
1	**	**	**	-
3	**	**	-	
2	**	-		
4	-			

** Significant at 99 % level of confidence.

Table 54

A Comparison among Occupational Group Means on Characteristic Factor II - Males

Analysis of Variance

Source of Variance	SS	df	MS	F	p
Between People	151.2578	67	2.2576		
Within People	80.2070	204	0.3932		
Groups	46.8516	3	15.6172	94.1092	0.0
Residual	33.3555	201	0.1659		
Total	231.4648	271			

Posterior Tests

Group (Means)	2 (5.782)	3 (5.179)	1 (4.898)	4 (4.674)
4	**	**	**	-
1	**	**	-	
3	**	-		
2	-			

** Significant at 99 % level of confidence.

Table 55

A Comparison among Occupational Group Means

on Characteristic Factor III - Males

Analysis of Variance

Source of Variance	SS	df	MS	F	P
Between People	94.7930	67	1.4148		
Within People	105.0234	204	0.5148		
Groups	73.9023	3	24.6341	159.1029	0.0
Residual	31.1211	201	0.1548		
Total	199.8164	271			

Posterior Tests

Group (Means)	2 (5.552)	4 (4.827)	1 (4.432)	3 (4.170)
3	**	**	**	-
1	**	**	-	
4	**	-		
2	-			

** Significant at 99 % level of confidence.

Table 56

A Comparison among Occupational Group Means on Characteristic Factor IV - Males

Analysis of Variance

Source of Variance	SS	df	MS	F	p
Between People	138.1680	67	2.0622		
Within People	36.6172	204	0.1795		
Groups	8.5156	3	2.8385	20.3030	0.0
Residual	28.1016	201	0.1398		
Total	174.7852	271			

Posterior Tests

Group (Means)	4 (4.874)	2 (4.732)	1 (4.637)	3 (4.388)
3	**	**	**	-
1	**	NS.	-	
2	*	-		
4	-			

** Significant at 99 % level of confidence.

* Significant at 95 % level of confidence.

NS. Nonsignificant.

Table 57

A Comparison among Occupational Group Means

on Characteristic Factor V - Males

Analysis of Variance

Source of Variance	SS	df	MS	F	p
Between People	101.6211	67	1.5161		
Within People	157.1484	204	0.7703		
Groups	116.3281	3	38.7760	190.9340	0.0
Residual	40.8203	201	0.2031		
Total	258.7695	271			

Posterior Tests

Group (Means)	1 (5.057)	4 (5.004)	2 (3.749)	3 (3.699)
3	**	**	NS.	-
2	**	**	-	
4	NS.	-		
1	-			

** Significant at 99 % level of confidence.

NS. Nonsignificant.

Table 58

A Comparison among Occupational Group Means on Characteristic Factor VI - Males

Analysis of Variance

Source of Variance	SS	df	MS	F	p
Between People	127.2227	67	1.8988		
Within People	121.5664	204	0.5959		
Groups	69.1836	3	23.0612	88.4889	0.0
Residual	52.3828	201	0.2606		
Total	248.7891	271			

Posterior Tests

Group (Means)	2 (5.004)	3 (4.785)	4 (3.985)	1 (3.824)
1	**	**	NS.	-
4	**	**	-	
3	*	-		
2	-			

** Significant at 99 % level of confidence.

* Significant at 95 % level of confidence.

NS. Nonsignificant.

Table 59

A Comparison among Occupational Group Means on Characteristic Factor I - Females

Analysis of Variance

Source of Variance	SS	df	MS	F	p
Between People	59.0012	24	2.4584		
Within People	93.0918	75	1.2412		
Groups	50.8586	3	16.9529	28.9016	0.0
Residual	42.2332	72	0.5866		
Total	152.0930	99			

Posterior Tests

Group (Means)	4 (5.109)	2 (4.974)	1 (4.086)	3 (3.349)
3	**	**	**	-
1	**	**	-	
2	NS.	-		
4	-			

** Significant at 99 % level of confidence.

NS. Nonsignificant.

Table 60

A Comparison among Occupational Group Means

on Characteristic Factor II - Females

Analysis of Variance

Source of Variance	SS	df	MS	F	p
Between People	83.7954	24	3.4915		
Within People	38.1213	75	0.5083		
Groups	17.8689	3	5.9563	21.1754	0.0
Residual	20.2524	72	0.2813		
Total	121.9168	99			

Posterior Tests

Group (Means)	2 (5.768)	1 (5.069)	4 (5.022)	3 (4.588)
3	**	**	**	-
4	**	NS.	-	
1	**	-		
2	-			

** Significant at 99 % level of confidence.

NS. Nonsignificant.

Table 61

A Comparison among Occupational Group Means

on Characteristic Factor III - Females

Analysis of Variance

Source of Variance	SS	df	MS	F	p
Between People	27.2717	24	1.1363		
Within People	57.3555	75	0.7647		
Groups	40.0134	3	13.3378	55.3754	0.0
Residual	17.3420	72	0.2409		
Total	84.6272	99			

Posterior Tests

Group (Means)	2 (5.426)	4 (4.504)	1 (4.386)	3 (3.645)
3	**	**	**	-
1	**	NS.	-	
4	**	-		
2	-			

** Signficant at 99 % level of confidence.

NS. Nonsignificant.

Table 62

A Comparison among Occupational Group Means on Characteristic Factors IV - Females

Analysis of Variance

Source of Variance	SS	df	MS	F	p
Between People	47.1531	24	1.9647		
Within People	22.0498	75	0.2940		
Groups	4.8264	3	1.6088	6.7254	0.0
Residual	17.2234	72	0.2392		
Total	69.2029	99			

Posterior Tests

Group (Means)	4 (5.080)	1 (4.917)	2 (4.766)	3 (4.484)
3	**	**	*	-
2	NS.	NS.	-	
1	NS.	-		
4	-			

** Significant at 99 % level of confidence.

* Significant at 95 % level of confidence.

NS. Nonsignificant.

Table 63

A Comparison among Occupational Group Means on Characteristic Factor V - Females

Analysis of Variance

Source of Variance	SS	df	MS	F	p
Between People	59.9067	24	2.4961		
Within People	45.8394	75	0.6112		
Groups	28.3694	3	9.4565	38.9734	0.0
Residual	17.4700	72	0.2426		
Total	105.7461	99			

Posterior Tests

Group (Means)	1 (4.980)	4 (4.852)	3 (4.504)	2 (3.616)
2	**	**	**	-
3	**	*	-	
4	NS.	-		
1	-			

** Significant at 99 % level of confidence.

* Significant at 95 % level of confidence.

NS. Nonsignificant.

Table 64

A Comparison among Occupational Group Means

on Characteristic Factor VI - Females

Analysis of Variance

Source of Variance	SS	df	MS	F	p
Between People	64.7544	24	2.6981		
Within People	43.5015	75	0.5800		
Groups	23.0715	3	7.6905	27.1032	0.0
Residual	20.4299	72	0.2837		
Total	108.2559	99			

Posterior Tests

Group (Means)	2 (5.281)	4 (4.292)	1 (4.191)	3 (4.076)
3	**	NS.	NS.	-
1	**	NS.	-	
4	**	-		
2	-			

** Significant at 99 % level of confidence.

* Significant at 95 % level of confidence.

NS. Nonsignificant.

Table 65

Multivariate Analysis of Variance for Occupational Groups of Males (M) and Females (F)

Occ. Groups	$\underline{c}_1$	$\underline{H}_1$	$\underline{F}$	$\underline{p} \leq$
M_1-F_1	0.1598	0.1378	2.2291	0.0424
M_1-F_2	1.4033	0.5839	20.1137	0.0001
M_1-F_3	0.8320	0.4541	11.9248	0.0001
M_1-F_4	0.9169	0.4783	13.1427	0.0001
M_2-F_1	1.2849	0.5623	18.4172	0.0001
M_2-F_2	0.0844	0.0779	1.2103	0.3089
M_2-F_3	2.0873	0.6761	29.9187	0.0001
M_2-F_4	1.5879	0.6136	22.7603	0.0001
M_3-F_1	0.8301	0.4536	11.8983	0.0001
M_3-F_2	0.7401	0.4253	10.6081	0.0001
M_3-F_3	0.4820	0.3252	6.9084	0.0001
M_3-F_4	1.0031	0.5008	14.3783	0.0001
M_4-F_1	0.9710	0.4926	13.9173	0.0001
M_4-F_2	1.7474	0.6360	25.0462	0.0001
M_4-F_3	1.4920	0.5987	21.3853	0.0001
M_4-F_4	0.2982	0.2297	4.2742	0.0008

Note For all comparisons: $\underline{s}=1$, $\underline{m}=2$, $\underline{n}=42$, $\underline{df}_1=6$, $\underline{df}_2=86$, and H = the single positive root of $H(H+E)^{-1}$ (see Morrison, 1967, pp. 159-170).

Table 66

Multivariate Analysis of Variance for Common-Occupational Groups of Males (M) and Females (F)

Occ. Groups	c_1	H_1	F	$p \leq$
M_1-F_1	0.1326	0.1171	1.9010	0.0898
M_1-F_2	1.7231	0.6328	24.6981	0.0001
M_1-F_3	0.8898	0.4708	12.7540	0.0001
M_1-F_4	0.8139	0.4487	11.6653	0.0001
M_2-F_1	1.2445	0.5545	17.8384	0.0001
M_2-F_2	0.0883	0.0812	1.2659	0.2816
M_2-F_3	1.8772	0.6524	26.9061	0.0001
M_2-F_4	1.6622	0.6244	23.8246	0.0001
M_3-F_1	0.4360	0.3036	6.2494	0.0001
M_3-F_2	1.4131	0.5856	20.2538	0.0001
M_3-F_3	0.0071	0.0071	0.1023	0.9960
M_3-F_4	0.9652	0.4912	13.8351	0.0001
M_4-F_1	0.8206	0.4507	11.7617	0.0001
M_4-F_2	2.0199	0.6689	28.9518	0.0001
M_4-F_3	1.2829	0.5620	18.3887	0.0001
M_4-F_4	0.1326	0.1171	1.9001	0.0899

Note For all comparisons: $s=1$, $m=2$, $n=42$, $df_1=6$, $df_2=86$, and H = the single positive root of $H(H+E)^{-1}$ (see Morrison, 1967, pp. 159-170).

APPENDIX C

INSTRUMENTS AND SUPPLEMENTARY MATERIALS

Table 67

Bipolar Adjective Pairs Used in a Pilot Study

(Step 2)

1. easy-difficult
2. pleasant-unpleasant
3. meaningless-meaningful
4. optimistic-pessimistic
5. unsuccessful-successful
6. sweet-sour
7. painful-pleasant
8. valuable-worthless
9. necessary-unnecessary
10. weak-strong
11. realistic-idealistic
12. smooth-rough
13. uncreative-creative
14. tense-relaxed
15. low-high
16. calm-agitated
17. bright-dark
18. happy-sad
19. fast-slow
20. complicated-simple
21. unpopular-popular
22. free-busy
23. bad-good
24. foolish-wise
25. enjoyable-boring
26. rugged-delicate
27. awful-nice
28. skilled-unskilled
29. simple-complex
30. light-heavy
31. soothing-exasperating
32. inferior-superior
33. hard-soft
34. egoistic-altruistic
35. dirty-clean
36. exciting-dull
37. well paid-poorly paid
38. honorable-menial
39. untimely-timely
40. unfair-fair
41. reputable-disreputable
42. sick-healthy
43. receiving-serving
44. undemanding-demanding
45. rich-poor
46. regressive-progressive
47. graceful-awkward
48. important-unimportant
49. kind-cruel
50. selfish-unselfish
51. active-passive
52. honest-dishonest
53. giving-taking
54. authoritarian-democratic

Table 68

Bipolar Adjective Pairs Used in a Preliminary Check with a Group of Students (Step 4)

1. aggressive-docile
2. academic-nonacademic
3. advancing-dead-ending
4. bright-dark
5. clean-dirty
6. creative-uncreative
7. calm-agitated
8. co-operative-competitive
9. contemporary-out-of-date
10. demanding-undemanding
11. delicate-rugged
12. dynamic-static
13. enjoyable-boring
14. easy-difficult
15. exciting-dull
16. giving-taking
17. good-bad
18. honorable-menial
19. happy-sad
20. honest-dishonest
21. high status-low status
22. important-unimportant
23. interesting-uninteresting
24. intellectual-unintellectual
25. independent-dependent
26. innovative-traditional
27. kind-cruel
28. meaningful-meaningless
29. masculine-feminine
30. materialistic-idealistic
31. necessary-unnecessary
32. nice-awful
33. new-old
34. pleasant-unpleasant
35. permanent-temporary
36. perfect-imperfect
37. practical-imaginative
38. powerful-powerless
39. rich-poor
40. relaxed-tense
41. reliable-unreliable
42. serving-receiving
43. smooth-rough
44. simple-complex
45. superior-inferior
46. skilled-unskilled
47. strong-weak
48. successful-unsuccessful
49. selfish-unselfish
50. secure-insecure
51. sociable-unsociable
52. stable-unstable
53. safe-dangerous
54. technical-manual
55. valuable-worthless
56. well paid-poorly paid

INSTRUCTIONS FOR ADMINISTERING THE QUESTIONNAIRE

(in both phases)

Please read the following instructions before administering the questionnaire:

1. Please tell your students, at the beginning of this session, that this questionnaire is a part of a study on attitudes toward occupations. The questionnaire has nothing to do with their school records. They should feel free to express their own feeling as accurately as possible.

2. There are, in fact, 2 sets of questionnaires in this administration. Half of the students receive one set and the other half, the second set. The questionnaires are already sorted in alternate order. This arrangement was designed so that every other student in this class would be assigned to two different groups. Please distribute the booklets to the class in any continuous scheme you feel convenient. The order in which the booklets are returned is not important.

3. Please read the instructions on the booklet to your class. Give them time to ask questions, if needed. Please emphasize that it is important that they do all items, quickly and accurately.

4. Please remind them to fill in the personal information section of the booklet before beginning the rating scales.

5. The time limit is not important.

6. It would be very much appreciated if you could record the time taken by the student who finishes first and the student who finishes last. You can write the time down on the cover of the first booklet.

ADDITIONAL INSTRUCTIONS TO TEACHERS

(in Phase 2)

1. The sample questionnaire given contains only a few of the 30 rating sheets. A complete booklet will have as many rating sheets as the number of occupations to be used in the administration, that is, one sheet for one occupation. The list of occupations is also given here.

2. Either pen or pencil can be used to mark the questionnaire.

3. Since the number of items in the booklet is quite large, time is short, and unfinished response cannot be processed, please help by encouraging your students to work quickly and to finish all items.

4. Though the present version of this questionnaire has been constructed on the basis of previous analyses, it is possible that some words seem, to some students, inappropriate to describe occupations. If this happens, it simply means that the students do not understand that occupations. If this problem occurs, please instruct the students who have the problem to place an X-mark in the middle of the rating scale. Do not let them leave any items blank.

5. Some occupations may be unfamiliar to some students. An attempt has been made to eliminate this problem. However, if this questions is raised, your brief explanation to the question will be appreciated.

6. A summary of the final report of this project will be given to the participating schools later this summer. Because this study is concerned with the population at large, individual scores on the questionnaire will not be reported.

A SAMPLE OF
THE QUESTIONNAIRE BOOKLET USED IN PHASE 1

Dear Student:

We are interested to know your feelings about certain occupations. The following is an example of some of them:

1. Clerk (typing, filing)
2. Linoleum layer
3. Tree surgeon
4. Practical nurse
5. Social worker
6. Journalist
7. Electronics worker

To show your feelings about any occupation, please follow these instructions as a guideline for your answers:

On the top of each of the following pages, there is an occupational title. Each occupational title is followed by a number of pairs of words (e.g., good-bad, easy-difficult, new-old, etc.). Use these pairs of words to think about the occupation printed at the top of the page. Each pair of words is on a broken line which looks like this:

Practical Nurse

Good ___:___:___:___:___:___:___ Bad
Easy ___:___:___:___:___:___:___ Difficult
New ___:___:___:___:___:___:___ Old

In this example, we will use only one pair of words, good-bad. However, you will find other pairs when you examine each occupation. Here is how to use them to show your feelings about an occupation:

1. If your feeling about the occupation is given by one word in the pair, show your feeling by placing an X-mark beside that word as follows:

Good _X_:___:___:___:___:___:___ Bad

or

Good ___:___:___:___:___:___:_X_ Bad

In this case, you feel that the occupation is really good or really bad.

2. If your feeling about that occupation is quite close to either word in the pair, you should place an X-mark as follows:

Good ___:_X_:___:___:___:___:___ Bad

or

Good ___:___:___:___:___:_X_:___ Bad

In this case, you feel that the occupation is quite good or quite bad.

3. If your feeling about that occupation is slightly closer to one word in the pair as opposed to the other, then you should place an X-mark as follows:

Good ___:___:_X_:___:___:___:___ Bad

or

Good ___:___:___:___:_X_:___:___ Bad

In this case, you feel that the occupation is slightly good or slightly bad.

4. The direction towards which word you check, of course, depends on which word of the pair seems closer to your feeling about that occupation. However, if you think that, for any one of the pairs of words, your feeling is described equally by both words, then you can place an X-mark in the middle of the broken line like this:

Good ___:___:___:_X_:___:___:___ Bad

This is not a test. There are no right answers nor wrong answers. Please try to place X-marks as closely to your real feelings as possible. Work quickly. Your first thought about an occupation is what we want. Do not spend too much long time for any pair of words. Be sure to make an X-mark, and only one X-mark, for every pair of words. Do not leave any pair unmarked.

Please place an X-mark in the middle of the dashed line, not in between.

THIS

___:_X_:___:___:___:___:___

NOT THIS

___:___:___X___:___:___:___

Personal Information

The following information about you is required. Please fill in the information before starting the questionnaire.

Sex: Male__________ Female__________ (Please place an X-mark)

Birthday: Day______ Month__________________ Year______________

Your Father's Present Occupation____________________________________

Your Mother's Present Occupation____________________________________

(Leave this blank if she is a housewife)

Your Expected Occupation after you leave school:

____

Now you have_______minutes to complete this questionnaire. Please turn to the next page and start.

OCCUPATION REPAIRMAN

uncreative ___:___:___:___:___:___:___ creative

taking ___:___:___:___:___:___:___ giving

unnecessary ___:___:___:___:___:___:___ necessary

perfect ___:___:___:___:___:___:___ imperfect

unreliable ___:___:___:___:___:___:___ reliable

skilled ___:___:___:___:___:___:___ unskilled

sociable ___:___:___:___:___:___:___ unsociable

poorly paid ___:___:___:___:___:___:___ well paid

dangerous ___:___:___:___:___:___:___ safe

successful ___:___:___:___:___:___:___ unsuccessful

rough ___:___:___:___:___:___:___ smooth

powerful ___:___:___:___:___:___:___ powerless

new ___:___:___:___:___:___:___ old

meaningless ___:___:___:___:___:___:___ meaningful

interesting ___:___:___:___:___:___:___ uninteresting

boring ___:___:___:___:___:___:___ enjoyable

good ___:___:___:___:___:___:___ bad

unimportant ___:___:___:___:___:___:___ important

kind ___:___:___:___:___:___:___ cruel

nice ___:___:___:___:___:___:___ awful

serving ___:___:___:___:___:___:___ receiving

A

OCCUPATION REPAIRMAN

weak ___:___:___:___:___:___:___ strong

unstable ___:___:___:___:___:___:___ stable

dark ___:___:___:___:___:___:___ bright

easy ___:___:___:___:___:___:___ difficult

sad ___:___:___:___:___:___:___ happy

feminine ___:___:___:___:___:___:___ masculine

unpleasant ___:___:___:___:___:___:___ pleasant

rich ___:___:___:___:___:___:___ poor

simple ___:___:___:___:___:___:___ complex

unselfish ___:___:___:___:___:___:___ selfish

worthless ___:___:___:___:___:___:___ valuable

secure ___:___:___:___:___:___:___ insecure

superior ___:___:___:___:___:___:___ inferior

tense ___:___:___:___:___:___:___ relaxed

temporary ___:___:___:___:___:___:___ permanent

dependent ___:___:___:___:___:___:___ independent

honest ___:___:___:___:___:___:___ dishonest

exciting ___:___:___:___:___:___:___ dull

undemanding ___:___:___:___:___:___:___ demanding

clean ___:___:___:___:___:___:___ dirty

B

OCCUPATION TOOLMAKER

uncreative ___:___:___:___:___:___:___ creative

taking ___:___:___:___:___:___:___ giving

unnecessary ___:___:___:___:___:___:___ necessary

perfect ___:___:___:___:___:___:___ imperfect

unreliable ___:___:___:___:___:___:___ reliable

skilled ___:___:___:___:___:___:___ unskilled

sociable ___:___:___:___:___:___:___ unsociable

poorly paid ___:___:___:___:___:___:___ well paid

dangerous ___:___:___:___:___:___:___ safe

successful ___:___:___:___:___:___:___ unsuccessful

rough ___:___:___:___:___:___:___ smooth

powerful ___:___:___:___:___:___:___ powerless

new ___:___:___:___:___:___:___ old

meaningless ___:___:___:___:___:___:___ meaningful

interesting ___:___:___:___:___:___:___ uninteresting

boring ___:___:___:___:___:___:___ enjoyable

good ___:___:___:___:___:___:___ bad

unimportant ___:___:___:___:___:___:___ important

kind ___:___:___:___:___:___:___ cruel

nice ___:___:___:___:___:___:___ awful

serving ___:___:___:___:___:___:___ receiving

A

OCCUPATION TOOLMAKER

weak ___:___:___:___:___:___:___ strong

unstable ___:___:___:___:___:___:___ stable

dark ___:___:___:___:___:___:___ bright

easy ___:___:___:___:___:___:___ difficult

sad ___:___:___:___:___:___:___ happy

feminine ___:___:___:___:___:___:___ masculine

unpleasant ___:___:___:___:___:___:___ pleasant

rich ___:___:___:___:___:___:___ poor

simple ___:___:___:___:___:___:___ complex

unselfish ___:___:___:___:___:___:___ selfish

worthless ___:___:___:___:___:___:___ valuable

secure ___:___:___:___:___:___:___ insecure

superior ___:___:___:___:___:___:___ inferior

tense ___:___:___:___:___:___:___ relaxed

temporary ___:___:___:___:___:___:___ permanent

dependent ___:___:___:___:___:___:___ independent

honest ___:___:___:___:___:___:___ dishonest

exciting ___:___:___:___:___:___:___ dull

undemanding ___:___:___:___:___:___:___ demanding

clean ___:___:___:___:___:___:___ dirty

B

A SAMPLE OF
THE QUESTIONNAIRE BOOKLET USED IN PHASE 2

Dear Student:

We are interested to know your feelings about certain occupations. The following is an example of some of them:

1. Airplane Pilot
2. Lawyer
3. Doctor
4. Policeman
5. Reporter

To show your feelings about any occupation, please follow these instructions as a guideline for your answers:

On the top of each of the following pages, there is an occupational title. Each occupational title is followed by a number of pairs of words (e.g., boring-enjoyable, important-unimportant, dangerous-safe, etc.). Use these pairs of words to think about the occupation printed at the top of the page. Each pair of words is on a broken line which looks like this:

Doctor

boring ___:___:___:___:___:___:___ enjoyable
important ___:___:___:___:___:___:___ unimportant
dangerous ___:___:___:___:___:___:___ safe

In this example, we will use only one pair of words, boring-enjoyable. However, you will find other pairs when you examine each occupation. Here is how to use them to show your feelings about an occupation:

1. If your feeling about the occupation is given by one word in the pair, show your feeling by placing an X-mark beside that word as follows:

boring _X_:___:___:___:___:___:___ enjoyable

or

boring ___:___:___:___:___:___:_X_ enjoyable

In this case, you feel that the occupation is really boring or really enjoyable.

2. If your feeling about the occupation is quite close to either word in the pair, you should place an X-mark as follows:

boring ___:_X_:___:___:___:___:___ enjoyable

or

boring ___:___:___:___:___:_X_:___ enjoyable

In this case, you feel that the occupation is quite boring or quite enjoyable.

3. If your feeling about the occupation is slightly closer to one word in the pair as opposed to the other, then you should place an X-mark as follows:

boring ___:___:_X_:___:___:___:___ enjoyable

or

boring ___:___:___:___:_X_:___:___ enjoyable

In this case, you feel that the occupation is slightly boring or slightly enjoyable.

4. The direction towards which word you check, of course, depends on which word of the pair seems closer to your feeling about that occupation. However, if you think that, for any one of the pairs of words, your feeling is described equally by both words, then you can place an X-mark in the middle of the broken line like this:

boring ___:___:___:_X_:___:___:___ enjoyable

This is not a test. There are no right answers nor wrong answers. Please try to place X-marks as closely to your real feelings as possible. Work quickly. Your first thought about an occupation is what we want. Do not spend too much long time for any pair of words. Be sure to make an X-mark, and only one X-mark, for every pair of words. Do not leave any pair unmarked.

Please place an X-mark in the middle of the dashed line, not in between.

THIS

___:_X_:___:___:___:___:___

NOT THIS

___:___:___X___:___:___:___

Personal Information

The following information about you is required. Please fill in the information before starting the questionnaire.

Sex: Male_________ Female_________ (Please place an X-mark)

Birthday: Day______ Month__________________ Year_______________

Your Father's Present Occupation____________________________________

Your Mother's Present Occupation____________________________________

(Leave this blank if she is a housewife)

Your Expected Occupation after you leave school:

____

Now you have_______minutes to complete this questionnaire. Please turn to the next page and start.

OCCUPATION AIRPLANE PILOT

boring ___:___:___:___:___:___:___ enjoyable

uninteresting ___:___:___:___:___:___:___ interesting

exciting ___:___:___:___:___:___:___ dull

unpleasant ___:___:___:___:___:___:___ pleasant

creative ___:___:___:___:___:___:___ uncreative

unimportant ___:___:___:___:___:___:___ important

necessary ___:___:___:___:___:___:___ unnecessary

valuable ___:___:___:___:___:___:___ worthless

meaningless ___:___:___:___:___:___:___ meaningful

rich ___:___:___:___:___:___:___ poor

poorly paid ___:___:___:___:___:___:___ well paid

simple ___:___:___:___:___:___:___ complex

cruel ___:___:___:___:___:___:___ kind

nice ___:___:___:___:___:___:___ awful

dangerous ___:___:___:___:___:___:___ safe

smooth ___:___:___:___:___:___:___ rough

powerful ___:___:___:___:___:___:___ powerless

weak ___:___:___:___:___:___:___ strong

WK - I -1

OCCUPATION CATTLE INSPECTOR

unimportant ___:___:___:___:___:___:___ important

necessary ___:___:___:___:___:___:___ unnecessary

valuable ___:___:___:___:___:___:___ worthless

meaningless ___:___:___:___:___:___:___ meaningful

rich ___:___:___:___:___:___:___ poor

poorly paid ___:___:___:___:___:___:___ well paid

simple ___:___:___:___:___:___:___ complex

cruel ___:___:___:___:___:___:___ kind

nice ___:___:___:___:___:___:___ awful

dangerous ___:___:___:___:___:___:___ safe

smooth ___:___:___:___:___:___:___ rough

powerful ___:___:___:___:___:___:___ powerless

weak ___:___:___:___:___:___:___ strong

boring ___:___:___:___:___:___:___ enjoyable

uninteresting ___:___:___:___:___:___:___ interesting

exciting ___:___:___:___:___:___:___ dull

unpleasant ___:___:___:___:___:___:___ pleasant

creative ___:___:___:___:___:___:___ uncreative

WK - II -2

OCCUPATION COOK

rich ___:___:___:___:___:___:___ poor

poorly paid ___:___:___:___:___:___:___ well paid

simple ___:___:___:___:___:___:___ complex

cruel ___:___:___:___:___:___:___ kind

nice ___:___:___:___:___:___:___ awful

dangerous ___:___:___:___:___:___:___ safe

smooth ___:___:___:___:___:___:___ rough

powerful ___:___:___:___:___:___:___ powerless

weak ___:___:___:___:___:___:___ strong

boring ___:___:___:___:___:___:___ enjoyable

uninteresting ___:___:___:___:___:___:___ interesting

exciting ___:___:___:___:___:___:___ dull

unpleasant ___:___:___:___:___:___:___ pleasant

creative ___:___:___:___:___:___:___ uncreative

unimportant ___:___:___:___:___:___:___ important

necessary ___:___:___:___:___:___:___ unnecessary

valuable ___:___:___:___:___:___:___ worthless

meaningless ___:___:___:___:___:___:___ meaningful

OCCUPATION TELEPHONE OPERATOR

cruel ___:___:___:___:___:___:___ kind

nice ___:___:___:___:___:___:___ awful

dangerous ___:___:___:___:___:___:___ safe

smooth ___:___:___:___:___:___:___ rough

powerful ___:___:___:___:___:___:___ powerless

weak ___:___:___:___:___:___:___ strong

boring ___:___:___:___:___:___:___ enjoyable

uninteresting ___:___:___:___:___:___:___ interesting

exciting ___:___:___:___:___:___:___ dull

unpleasant ___:___:___:___:___:___:___ pleasant

creative ___:___:___:___:___:___:___ uncreative

unimportant ___:___:___:___:___:___:___ important

necessary ___:___:___:___:___:___:___ unnecessary

valuable ___:___:___:___:___:___:___ worthless

meaningless ___:___:___:___:___:___:___ meaningful

rich ___:___:___:___:___:___:___ poor

poorly paid ___:___:___:___:___:___:___ well paid

simple ___:___:___:___:___:___:___ complex

WK - IV -4

OCCUPATION SALESMAN

dangerous ___:___:___:___:___:___:___ safe
smooth ___:___:___:___:___:___:___ rough
powerful ___:___:___:___:___:___:___ powerless
weak ___:___:___:___:___:___:___ strong
boring ___:___:___:___:___:___:___ enjoyable
uninteresting ___:___:___:___:___:___:___ interesting
exciting ___:___:___:___:___:___:___ dull
unpleasant ___:___:___:___:___:___:___ pleasant
creative ___:___:___:___:___:___:___ uncreative
unimportant ___:___:___:___:___:___:___ important
necessary ___:___:___:___:___:___:___ unnecessary
valuable ___:___:___:___:___:___:___ worthless
meaningless ___:___:___:___:___:___:___ meaningful
rich ___:___:___:___:___:___:___ poor
poorly paid ___:___:___:___:___:___:___ well paid
simple ___:___:___:___:___:___:___ complex
cruel ___:___:___:___:___:___:___ kind
nice ___:___:___:___:___:___:___ awful

WK - V - 5

OCCUPATION LAWYER

powerful	___:___:___:___:___:___:___	powerless
weak	___:___:___:___:___:___:___	strong
boring	___:___:___:___:___:___:___	enjoyable
uninteresting	___:___:___:___:___:___:___	interesting
exciting	___:___:___:___:___:___:___	dull
unpleasant	___:___:___:___:___:___:___	pleasant
creative	___:___:___:___:___:___:___	uncreative
unimportant	___:___:___:___:___:___:___	important
necessary	___:___:___:___:___:___:___	unnecessary
valuable	___:___:___:___:___:___:___	worthless
meaningless	___:___:___:___:___:___:___	meaningful
rich	___:___:___:___:___:___:___	poor
poorly paid	___:___:___:___:___:___:___	well paid
simple	___:___:___:___:___:___:___	complex
cruel	___:___:___:___:___:___:___	kind
nice	___:___:___:___:___:___:___	awful
dangerous	___:___:___:___:___:___:___	safe
smooth	___:___:___:___:___:___:___	rough